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Contract NAS3-21260

CORE NOISE INVESTIGATION OF THE CF6-50 TURBOFAN ENGINE DATA REPORT

Internal and Farfield Narrowband and One-Third Octaveband Spectra from the Acoustic Test of the CF6-50 Engine (S/N 455-768)

Prepared by V.L. Doyle

(NASA-CP-159598) CORE NOISE INVESTIGATION OF THE CP6-50 TURBOFAN ENGINE Data Peport, 1978 - 1979 (General Electric Co.) 357 p HC A16/MF A01 CSCL 21E N80-16061

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PREPARED FOR

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1.0 SUMMARY

An acoustic test of a CF6-50 engine equipped with a standard production combustor was conducted to acquire simultaneous engine internal and farfield fluctuating pressure measurements. The purpose of the test was to acquire the data necessary to determine the effect of internally generated core noise on the farfield measurements in support of NASA Lewis Contract NAS3-21260.

This document presents the measured data in terms of narrowband spectra of 2 Hz bandwidth for a frequency range of 0 to 2000 Hz; and in one-third octaveband spectra from 50 to 5000 for internal fluctuating pressure levels and 50 to 10000 Hz for farfield sound pressure levels.

2.0 INTRODUCTION

The data presented in this document is part of the data acquired from an outdoor acoustic test of a CF6-50 turbofan engine. The test, sponsored by the NASA Lewis Research Center's Contract NAS3-21260, was conducted to obtain simultaneous internal and farfield measurements from the engine. The data will be used to assist in the analysis of the test results to determine the influence of core noise measurements on the farfield levels.

This document presents narrowband and one-third octaveband spectra from all internal and farfield sensors used in the engine test.

3.0 OBJECTIVES

The primary objective of the CF6-50 Core Noise Measurements Program sponsored by Contract NAS3-21260 is to determine the influence of internally generated core noise on the external engine noise farfield signature.

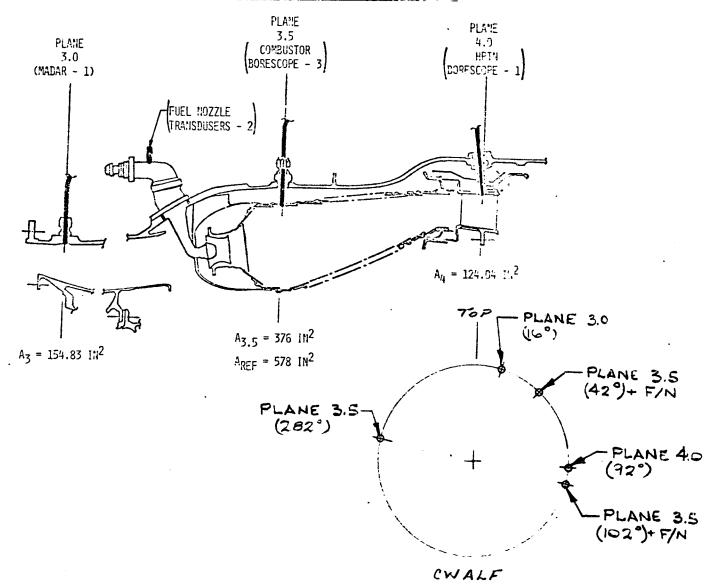
This set of data supports the direct acoustic analysis requirements of the core noise measurements program.

4.0 TEST DESCRIPTION SUMMARY

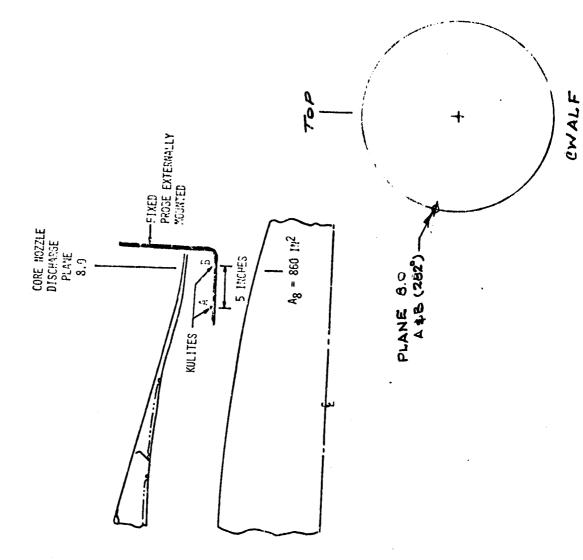
An acoustic test was conducted for NASA Lewis Contract NAS3-21260 on a CF6-50 high by-pass turbofan engine equipped with a standard production combustor. The purpose of these tests was to measure simultaneously, the internally generated core noise and the farfield engine noise, and to determine, through analysis, the influence of this internally generated noise on the farfield measurements.

The measurements were obtained over the engine sea level static operating line from a combination of nine (9) internal Kulites and fifteen (15) farfield microphones which were ground mounted around a 150 ft. farfield arc. Instrumentation locations are illustrated in Figures 1 through 3. Test conditions included eight operating settings between idle and takeoff power. Two sets of data are presented for the conditions shown in Table 1. Narrowband (2 Hz bandwidth) spectral plots from 0 to 2000 Hz are presented in Appendix A for each sensor at all eight power settings. The second set of data (Appendix B) includes tabulations and plots of 1/3 octave band spectra for all sensors at each of the power settings.

FIGURE 1. INTERNAL SENSOR LOCATIONS FOR ENGINE COMBUSTOR NOISE MEASUREMENTS



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FIGURE 3. FARFIELD MICROPHONE ARRAY FOR CF6-50 CORE NOISE MEASUPEMENTS

- PEEBLES, SITE 4D TEST STAND
- MICROPHONES, 1/2" B & K 4134'S USED FOR GRAZING INCIDENCE AND GRIENTED VERTICAL WITH HEAD TOWARD CONCRETE

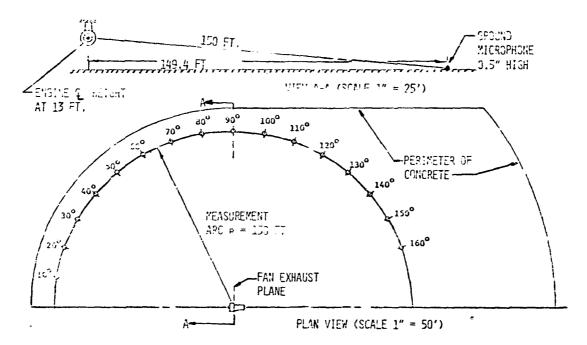


TABLE 1.

MATRIX OF TEST CONDITIONS

| REMARKS | $1 \frac{\sqrt{\theta_2(rpm)}}{1}$ | NOM % THRUST | AERO RDG | CEST |
|------------------|------------------------------------|-----------------|-------------|------|
| Idla | 865 | 3.8 | 544 | 1 |
| | 2108 | 22.8 | 546 | 2 |
| Approach | 2350 | 30.8 | 551 | 3 |
| | 2544 | 36. 5 | 557 | 4 |
| | 2770 | 45.5 | 561 | 5 |
| | 3223 | 67.8 | 563 | 6 |
| limbout | 3459 | 85.5 | 565 | 7 |
| lake of f | 3701 | 99.8 | 567 | 8 |

APPENDIX A 2 Hz Narrowband Spectra Results from CF6-50 Core Noise Measurements Program

2 Hz Narrowband Spectra Results from CF6-50 Core Noise Measurements Program

The 2 Hz parrowband spectra presented in this appendix cover a range of frequencies from 0 to 2000 Hz and include spectra from nine (9) internal Kulites and fifteen (15) farfield microphones. A complete set of spectra is supplied for each of eight (8) data points covering the operating range of the CF6-50 engine.

The Kulite fluctuating pressure level (FPL) spectra are as measured and include those from the five (5) waveguide sensors in the combustor region which were corrected for the ambient frequency response of the systems. No corrections were applied to the spectra from the flush mounted Kulites in the sound separation probe or fuel nozzle sensors. The fuel nozzle sensor measurements were of liquid (fuel) fluctuation but were considered as aerodynamic pressure fluctuations in the narrowband analysis.

The microphone sound pressure level (SPL) spectra are from raw measurements, corrected for microphone response but not to standard day or freefield conditions.

Each narrowband spectral plot has the following information noted on it:

- 1. Sensor location, e.g. Kulite (Plane) / Microphone (Angle)
- 2. Aerodynamic Reading No., e.g. Rdg. No. ()
- 3. Tape Run No., e.g. Run No. ()
- 4. Fan Speed e.g. () RPM
- 5. Percent Net Thrust (nominal), e.g. % Thrust = ()
- 6. OAFPL/OASPL, dB re $2 \times 10^{-5} \text{ N/m}^2$
- 7. Gain Setting/sensitivity, 1/(psi/volt)
- 8. Block Size/Sample Rate, 4096/8192.

The number of block averages employed was 20 and a total sample record length of 10 seconds was used in the analysis of the data.

Summary tabulations of the computed overall levels from all the 2 Hz narrow-band spectra over the 0 to 2000 Hz frequency range are contained in Tables 2 and 3. Table 2 lists internal Kulite levels (OAFPL) for the flucutating pressure measurements, while Table 3 lists the farfield levels (OASPL).

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CF6-50 CORE NOISE MEASUREMENTS

TABLE 2. NARROWBAND (2 Hz Bandwidth) SPECTRA FOR INTERNAL KULITES

Calculated **OAFPL**, dB $\Delta f = G-2000 \text{ Hz}$

Internal Kulite Sensors

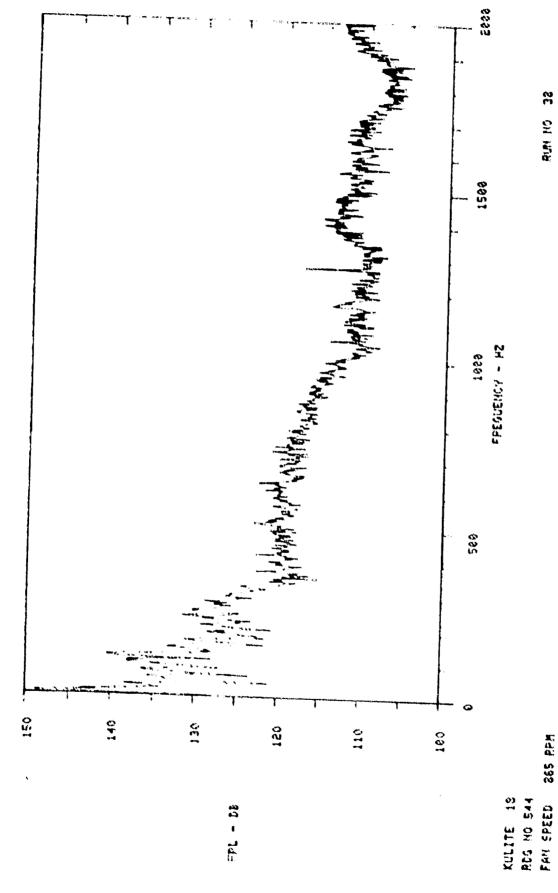
| Rdg. | Pct. | Fan | Core | 3.0 | 3.5 | 3.5 | 3.5 | 4.0 | 8.0 | 8.0 | F/N | F/N | Plane |
|------|-----------------|-------|--------------|-----------------|-----------------------|------------|------------------------|-----------------------|-----------------------------|-----------------------------|------------------|-------------------|-------------------|
| No. | Thrust (Nom) | Speed | Speed rpm | 16 ⁰ | 42 ⁰ 19 | 102° 20 | 282 ⁰ 21 | 92 ⁰ 22 | A 270 ⁰ 24 | В 270 ⁰ 26 | s=0 42° 23 | P-S 102° 25 | θ Loc. Channel |
| 544 | 3.8 | 865 | 6582 | 157.2 | 159.0 | 159.7 | 158.8 | 157.1 | 133.9 | 131.7 | 182.1 | 173.3 | |
| 546 | 22.5 | 2108 | 8452 | 167.4 | 169.5 | 170.6 | 169.5 | | | 140.4 | 176.8 | 176.2 | |
| 551 | 30.8 | 2350 | 8688 | 169.0 | 170.7 | 172.1 | 171.4 | 168.6 | 142.1 | 142.0 | 179.3 | 177.3 | |
| 557 | 36.6 | 2544 | 8881 | 169.9 | 172.3 | 173.2 | 172.9 | 169.5 | 143.1 | 142.3 | 180.7 | 178.5 | |
| 561 | 45.6 | 2770 | 9106 | 170.5 | 173.7 | 174.5 | 174.2 | 170.7 | 144.3 | 144.0 | 180.7 | 179.7 | |
| 563 | 67.8 | 3223 | 9668 | 171.5 | 175.4 | 176.8 | 176.1 | 175.8 | 148.5 | 147.8 | 181.3 | 181.1 | |
| 565 | 85.5 | 3459 | 9959 | 172.2 | 177.1 | 178.5 | 177.3 | 175.3 | 151.3 | 149.9 | 182.4 | 182.4 | |
| 567 | 99.8 | 3701 | 10280 | 173.5 | 178.7 | 180.3 | 178.9 | 175.2 | 153.9 | 151.9 | 184.1 | 184.2 | |

CF6-50 CORE NO__ MEASUREMENTS

TABLE 3. NARROWBAND (2 Hz Bandwidth) SPECTRA FOR FARFIELD MICROPHONES Calculated OASPL, dB Δf = 0-2000 Hz

Ground Plane Microphones (150 ft. Arc)

| Rdg. | Pct Thrust (Nom) | Fan Speed rpm | Core Speed rpm | 10° 2 | 30° 4 | 40° 5 | 50 ⁰ 6 | 60° 7 | 70° 8 | 80° 9 | 90° 10 | θ Loc Channel |
|------------|------------------------|---------------------|----------------------|----------|------------------|------------------------|----------------------|------------------------|----------|------------|-----------|------------------|
| 544 | 3.8 | 865 | 6562 | 103.6 | 96.4 | 99.1 | 95.4 | 93.4 | 92.8 | 91.4 | 90.9 | |
| 54€ | 22.5 | 2108 | 8452 | 103.1 | 102.6 | 103.7 | 102.5 | 102.0 | 100.7 | 100.0 | 100.6 | |
| 551 | 30.8 | 2350 | 8688 | 104.9 | 104.8 | 105.4 | 104.3 | 103.9 | 102.7 | 102.3 | 102.9 | |
| 557 | 36.6 | 2544 | 8881 | 106.9 | 106.9 | 107.1 | 106.2 | 105.8 | 104.8 | 104.4 | 104.8 | |
| 561 | 45.6 | 2770 | 9106 | 108.8 | 108.8 | 109.7 | 108.9 | 109.5 | 107.1 | 106.7 | 107.2 | |
| 563 | 67.8 | 3223 | 9668 | 113.1 | 112.8 | 114.3 | 112.9 | 112.6 | 111.9 | 111.4 | 111.9 | |
| 565 | 85.5 | 3459 | 9959 | 111.9 | 112.8 | 114.3 | 113.9 | 114.3 | 113.6 | 113.6 | 114.3 | |
| 567 | 99.8 | 3701 | 10280 | 113.0 | 113.9 | 115.2 | 115.1 | 115.7 | 115.5 | 115.8 | 116.5 | |
| | | | | | | • | • | | | | | |
| Rdg. | Pct Thrust (Nom) | Fan Speed rpm | Core Speed rpm | 100° | 110 ⁰ | 120 ⁰ 13 | 130° 14 | 140 ⁰ 15 | 150° | 160° 17 | | 0 Loc Channel |
| 544 | 3.8 | 865 | 6562 | 91.9 | 93.4 | 95.0 | 94.9 | 95.2 | 94.3 | 92.4 | | |
| 546 | 22.5 | 2108 | 8452 | 101.0 | 102.3 | 103.6 | 103.9 | 103.7 | 103.8 | 103.1 | | |
| 551 | 30.8 | 2350 | 8688 | 103.6 | 104.4 | 106.6 | 106.2 | 106.7 | 107.5 | 106.7 | | |
| 557 | 36.6 | 3544 | 8881 | 105.2 | 106.1 | 107,8 | 107.8 | 108.6 | 109.6 | 109.6 | | |
| 561 | 45.6 | 2770 | 9106 | 107.7 | 108.5 | 110.1 | 109.4 | 111.9 | 113.1 | 114.0 | | |
| 563 | 67.8 | 3223 | 9668 | 112.9 | 113.8 | 116.1 | 115.3 | 119.5 | 122.1 | 123.4 | | |
| 565 | 85.5 | 3459 | 9959 | 115.3 | 116.5 | 118.6 | 117.9 | 123.7 | 126.6 | 128.5 | | |
| 5 u | <u>(</u> | <u> </u> | .30 | 7.8 | 10.7 | 721.5 | 121.7 | 128 1 | 131 0 | 132.3 | | |

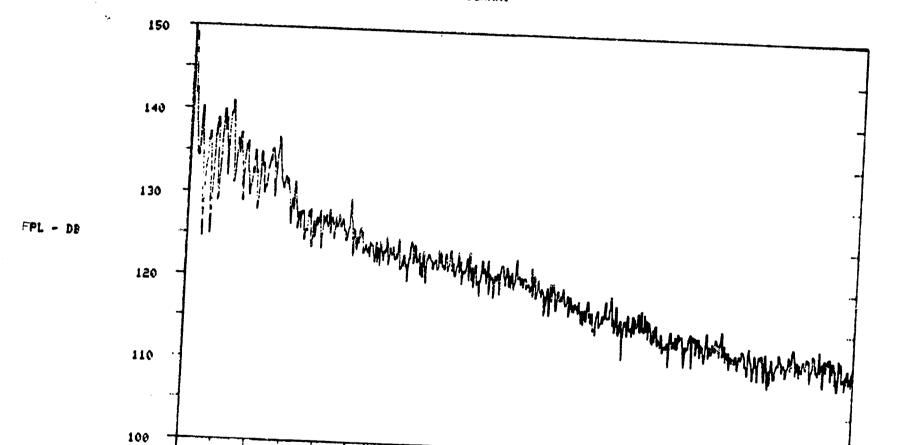


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ξ3

CAFPL 157.2 DB



KULITE 19
RDG NO 544
FAN SPEED 865 RPM
OAFPL 159.0 DB

RUN NO 38 * THRUST- 3.88 G/S 1./ 0.56000 BS/SR 4096/ 8192

1500

1000

FPEQUENCY - HZ

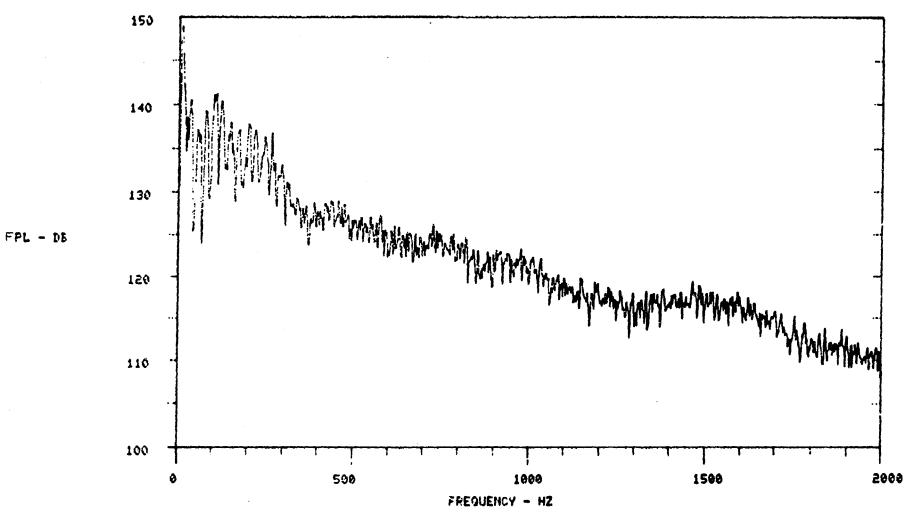
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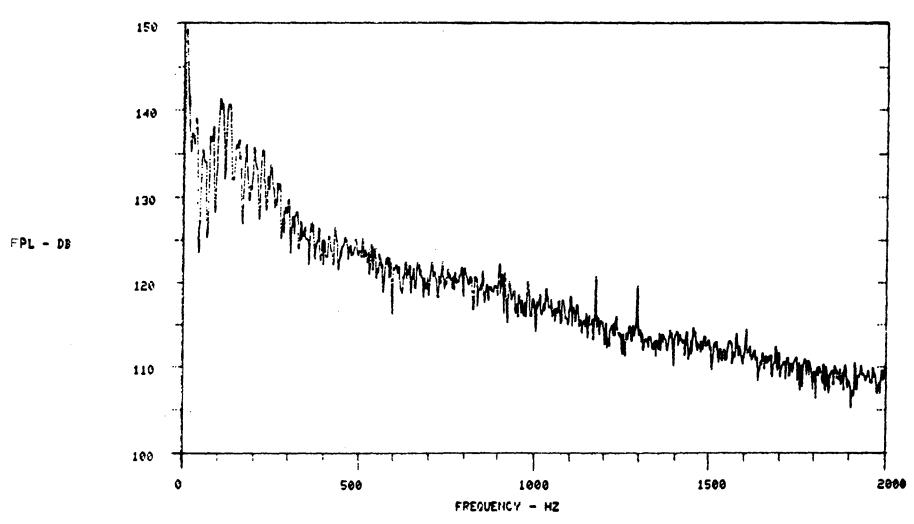
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CF6-50 CORE NOISE PROGRAM.



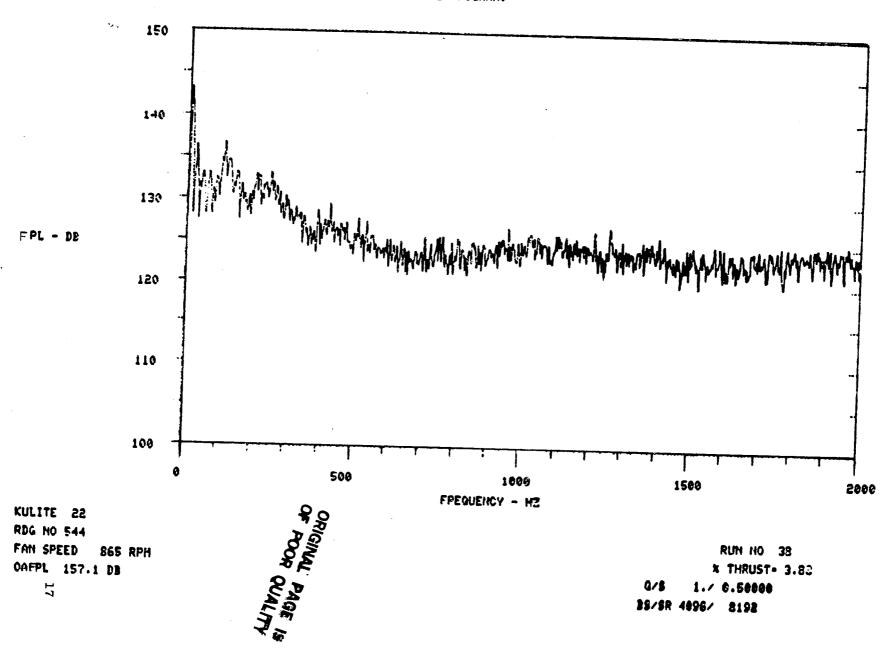
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RUN NO 38 x THRUST- 3.88 Q/S 1./ 0.50000 85/SR 4096/ 8192



KULITE 21 RDG NO 544 FAN SPEED 365 RPM OAFFL 158.8 DB

RUN NO 38 * THRUST= 3.88 Q/S 8./ 0.50000 85/5R 4096/ 8198



18 130 1 20 110 FPL - DE 100 90

1000

FREQUENCY - HZ

CF6-50 CORE NOISE PROGRAM

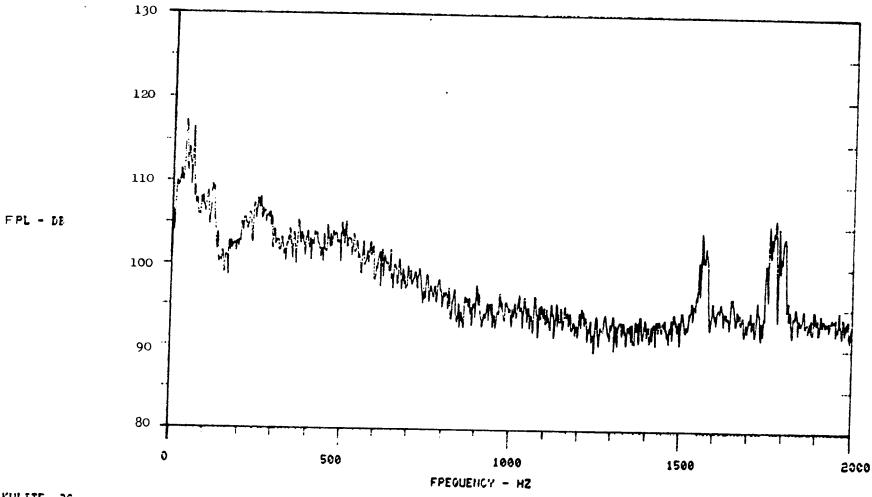
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KULITE 24 RDG NO 544 FAN SPEED 865 RPM OAFPL 133.9 DB

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2000

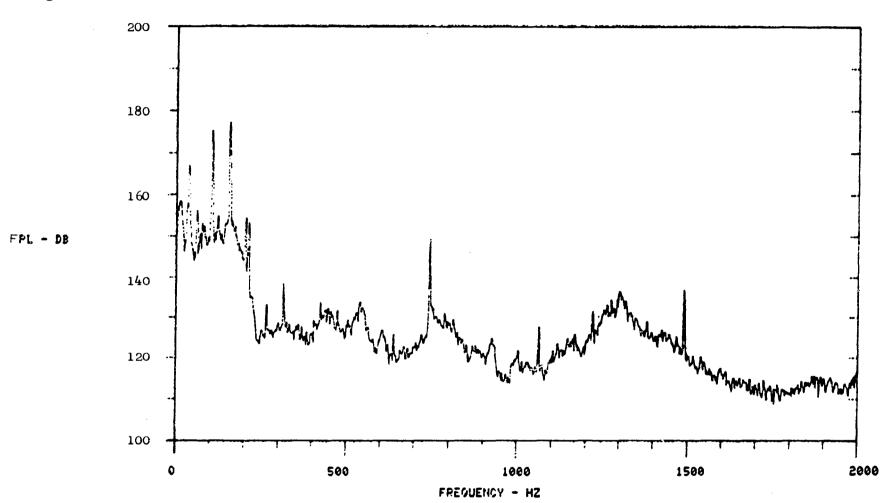
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KULITE 26 RDG NO 544 FAN SPEED 865 RPM OAFPL 131.7 DB

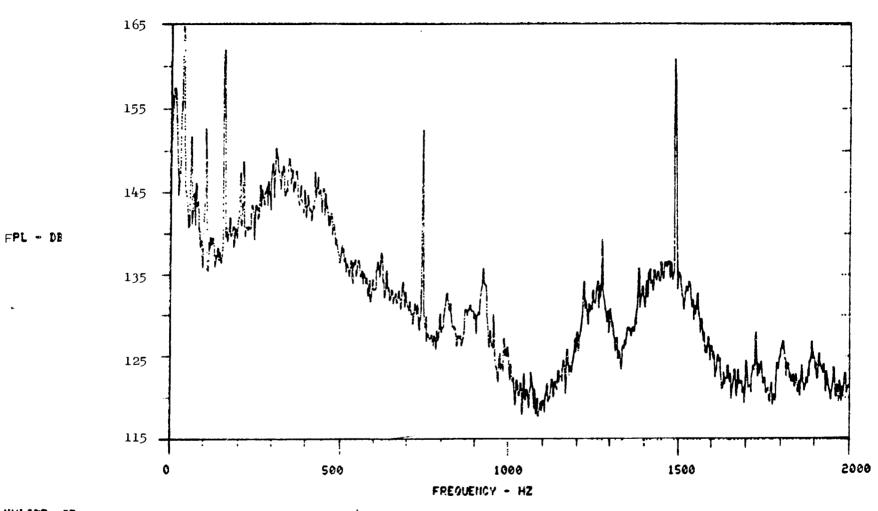
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CF6-50 CORE NOISE PROGRAM



KULITE 23 RDG NO 544 FAN SPEED 865 RPM **CAFPL** 182.1 DB

RUN NO 38 * THRUST- 3.88 1./ 0.50000 BS/SR 4096/ 8192



RULITE 25 RDG NO 544 FAN SPEED 865 RPM OAFPL 173.3 DB

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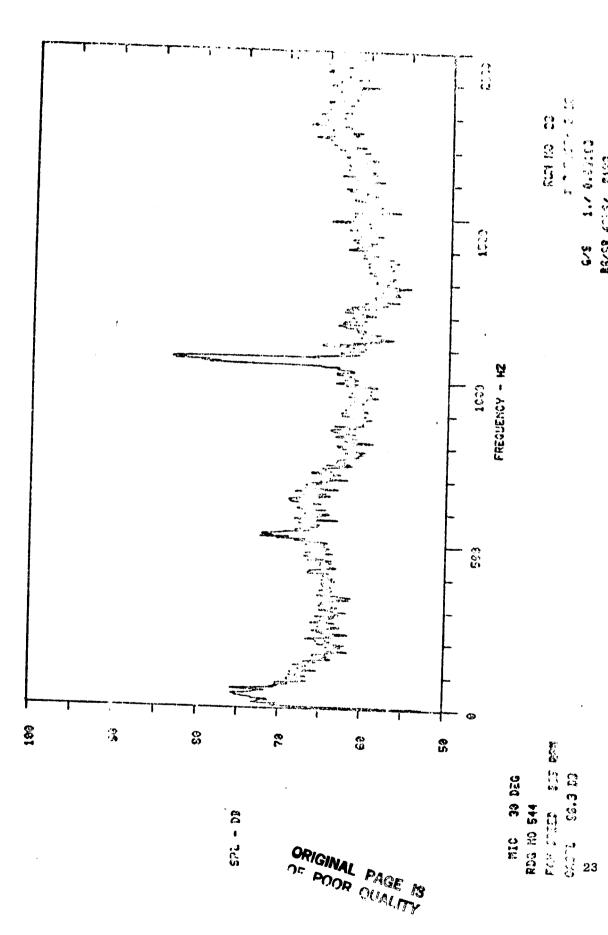
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CALPL 162.6 DB

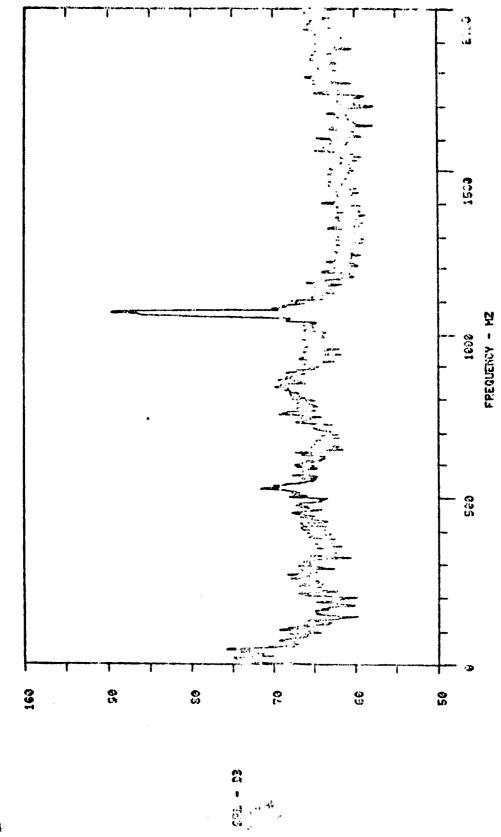
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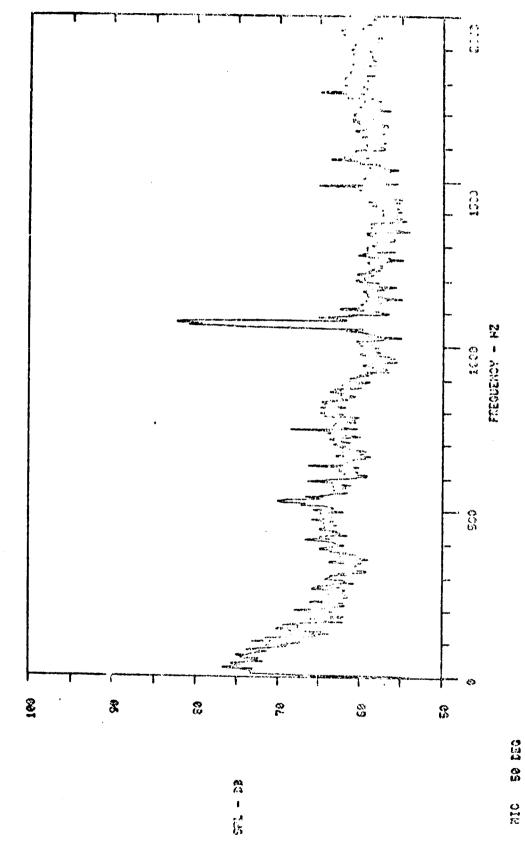
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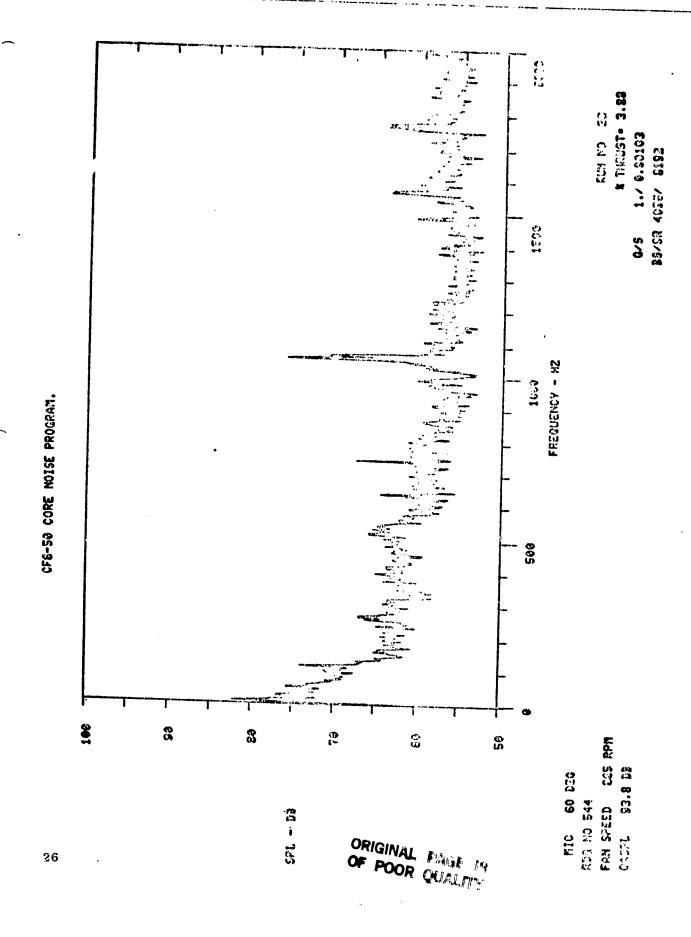
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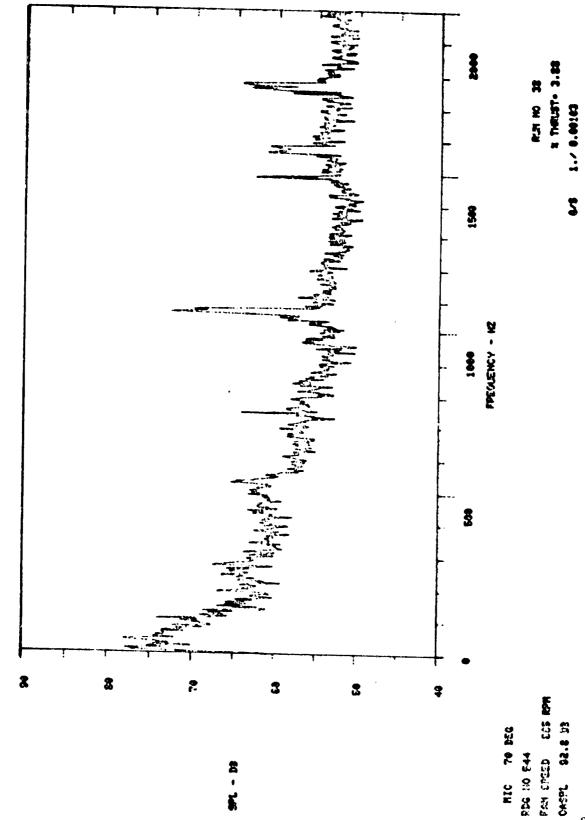


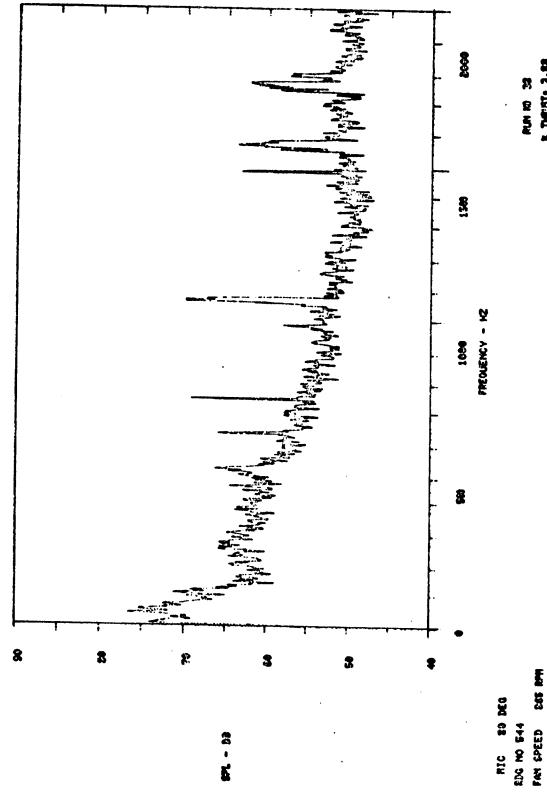
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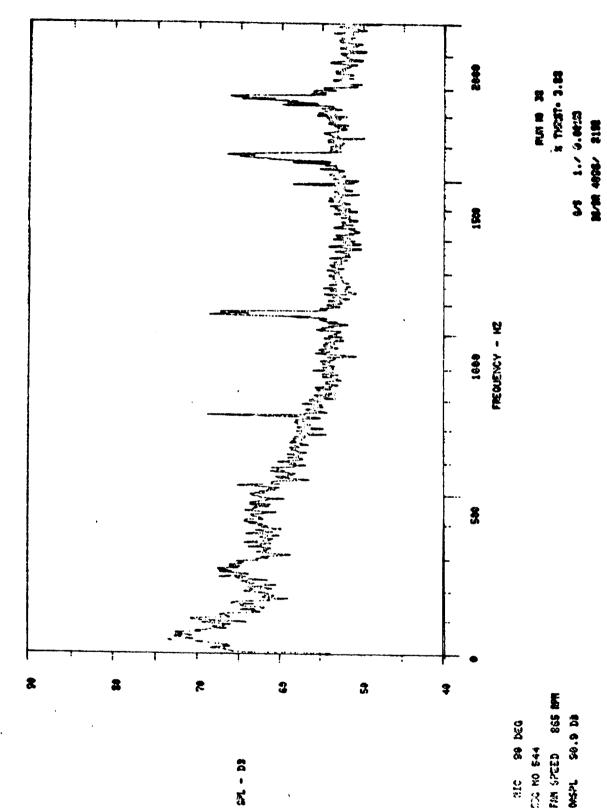
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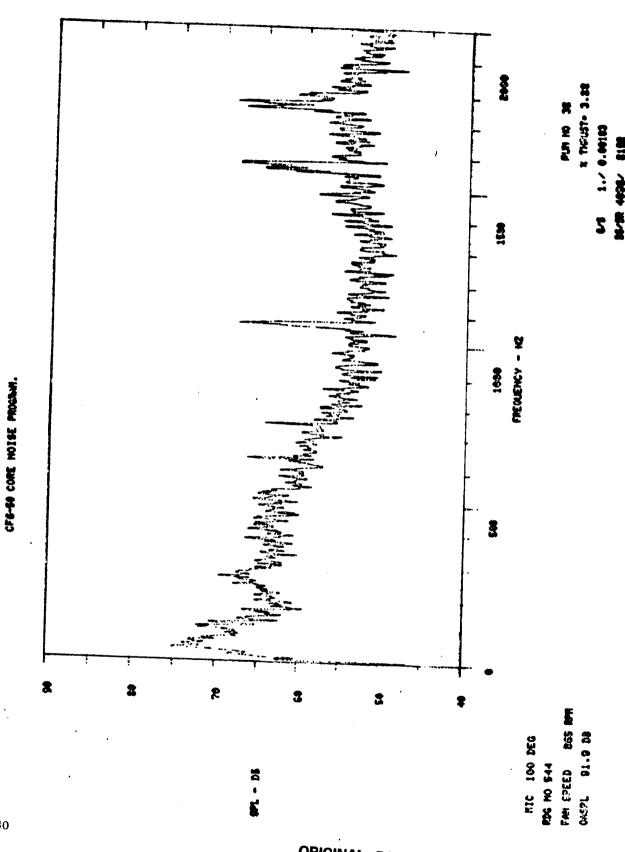




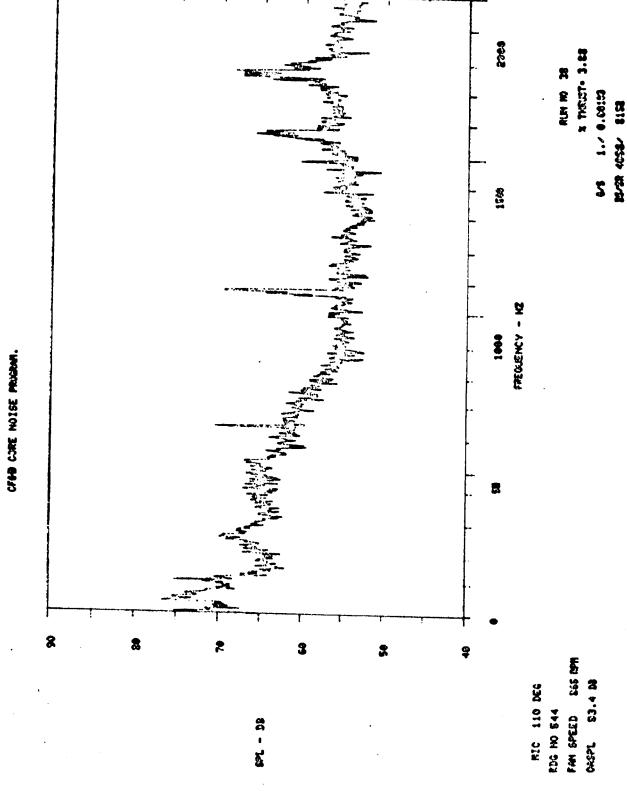


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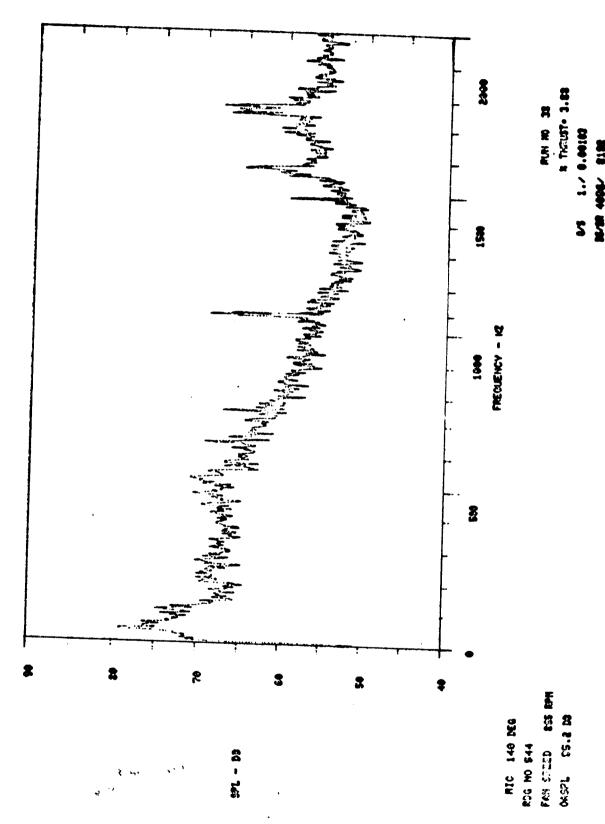


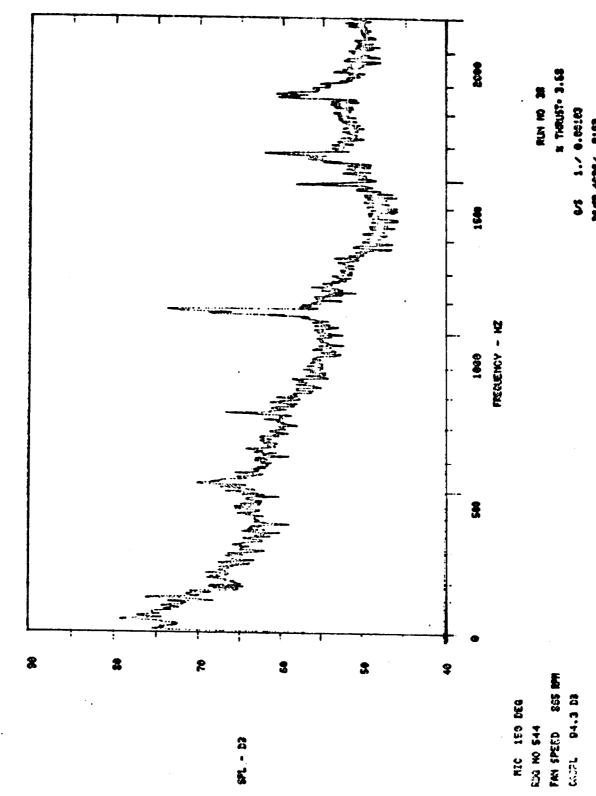
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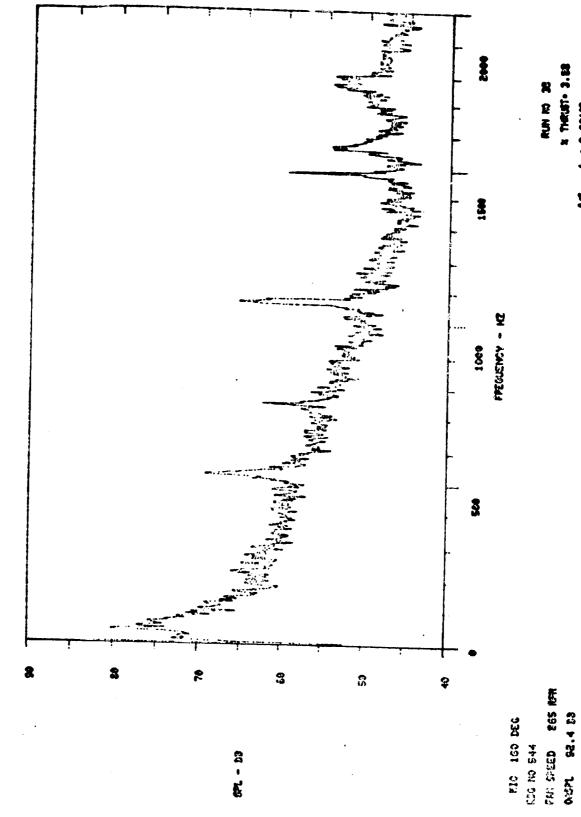
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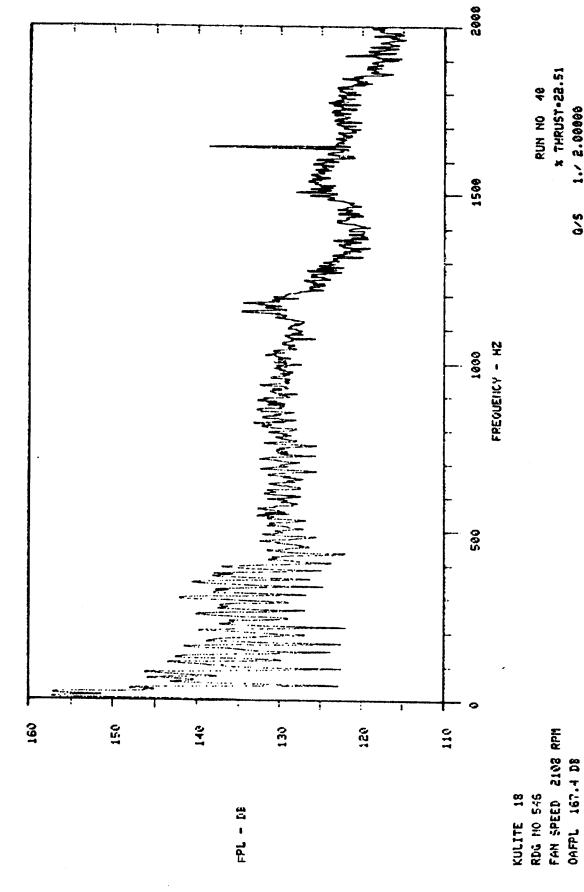
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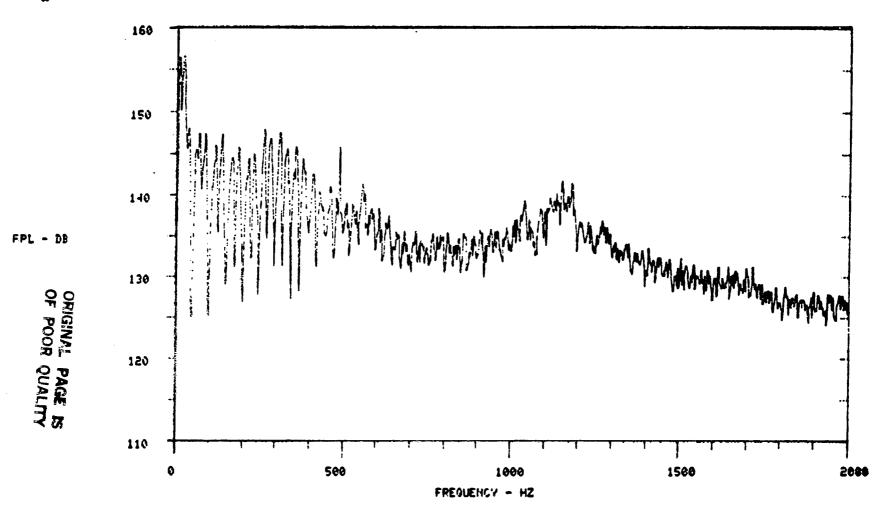




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ES/5R 4996/ 8192

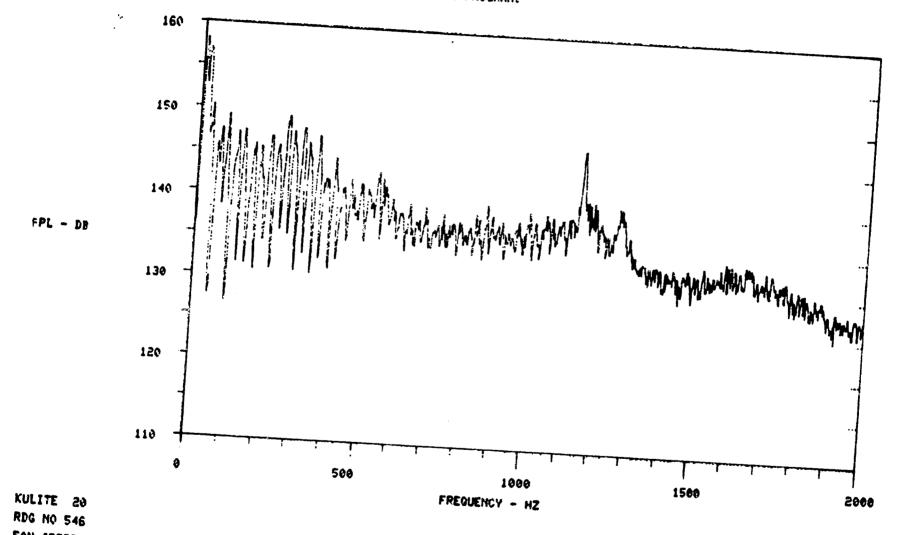
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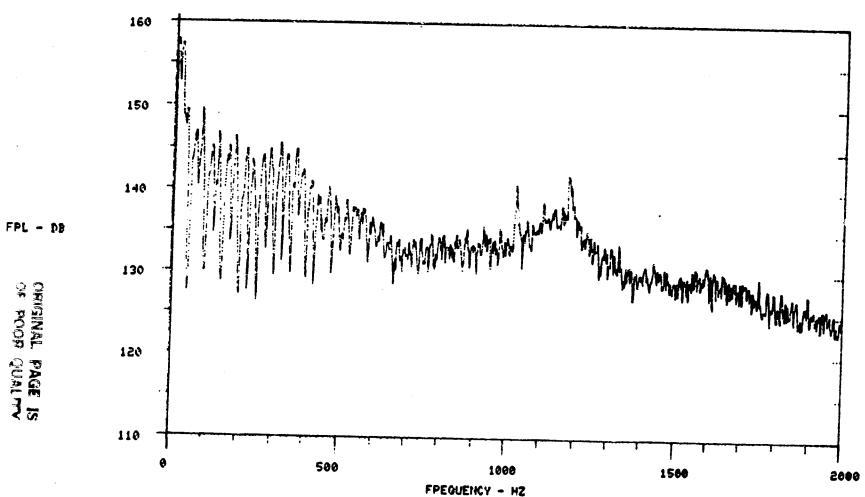
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CF6-50 CORE NOISE PROGRAM.



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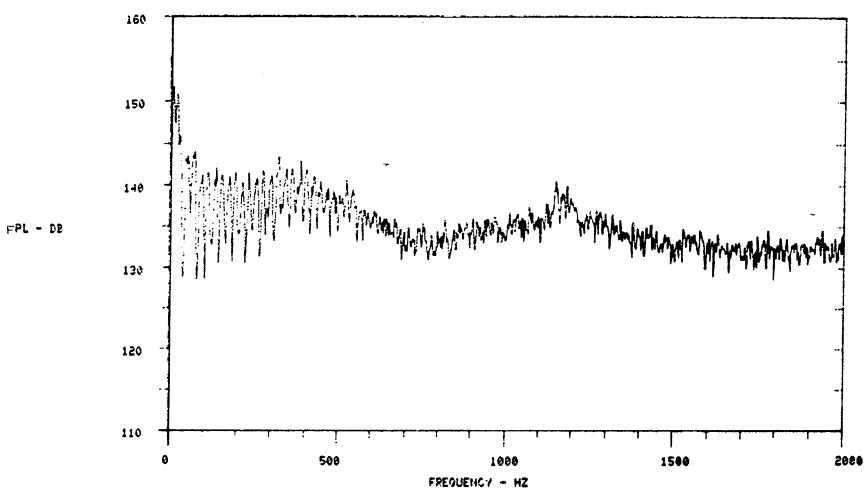
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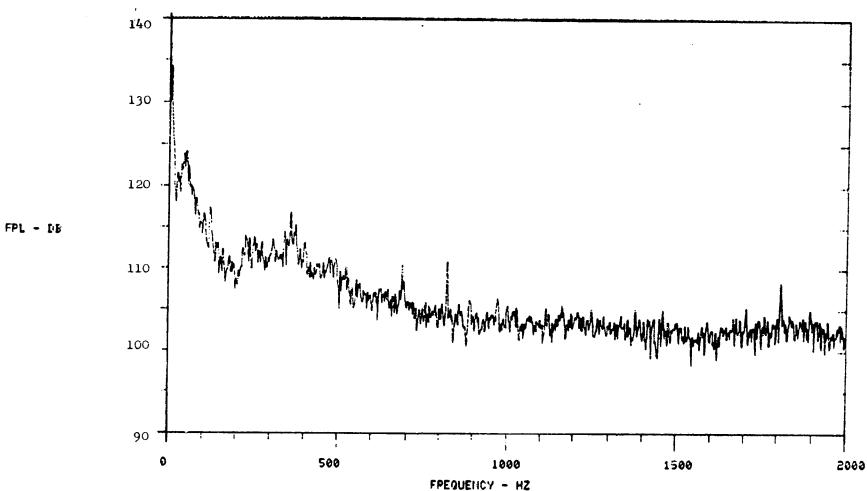
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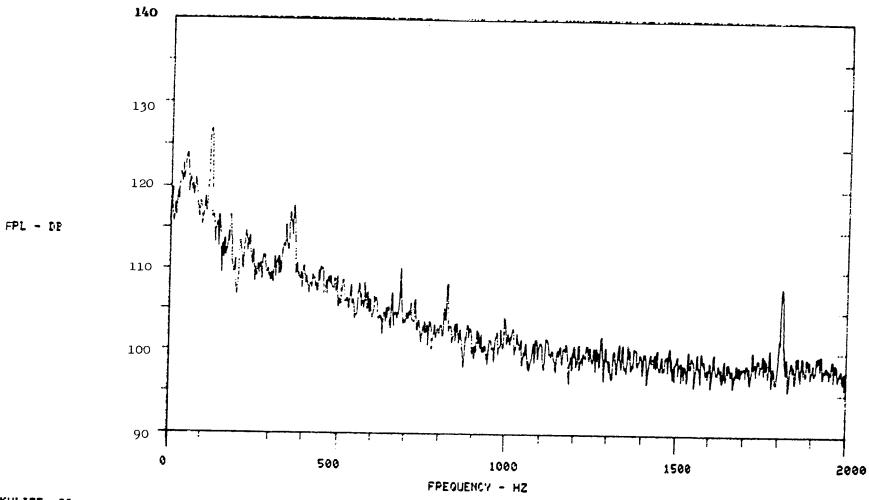
CF6-50 CORE NOISE PROGRAM



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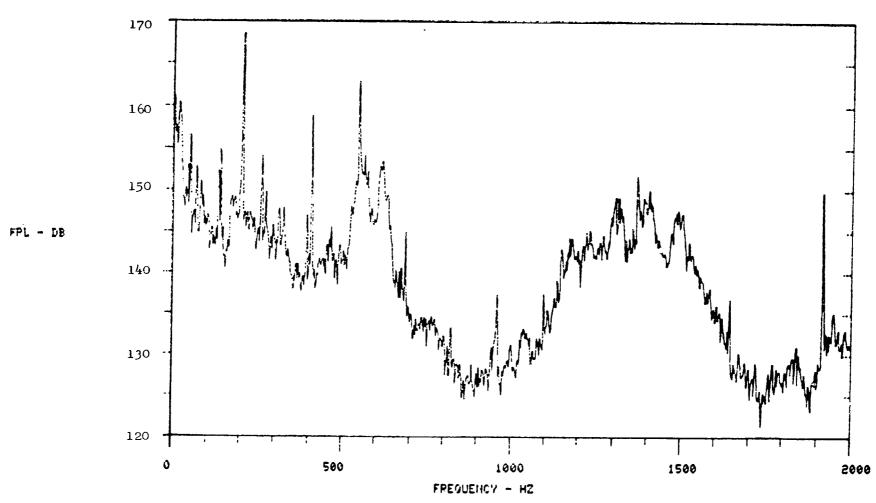
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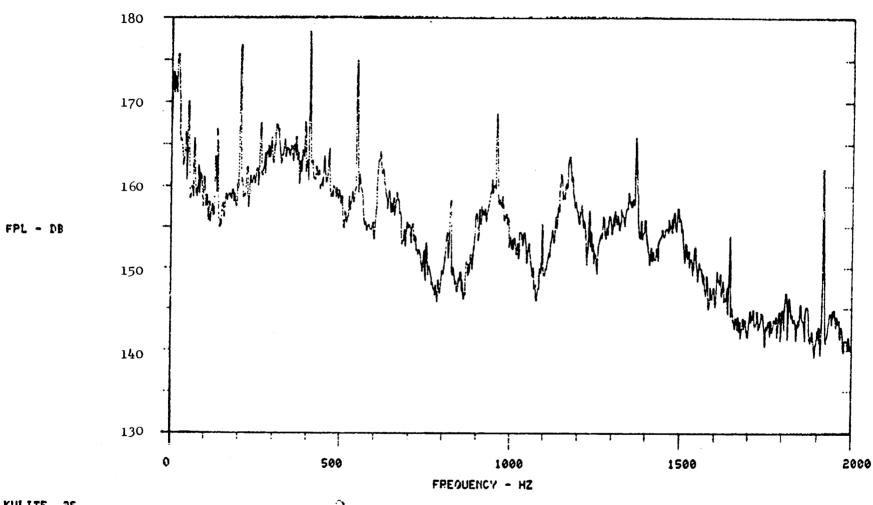
CF6-50 CORE NOISE PROGRAM



KULITE 23 RPG NO 546 FAN SPEED 2108 RPM ORFPL 176.8 DB

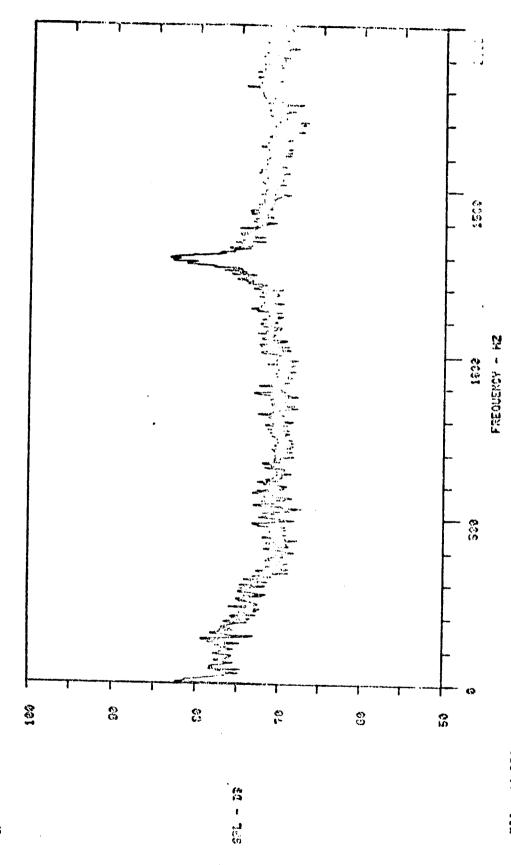
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CF6-50 CORE NOISE PROGRAM



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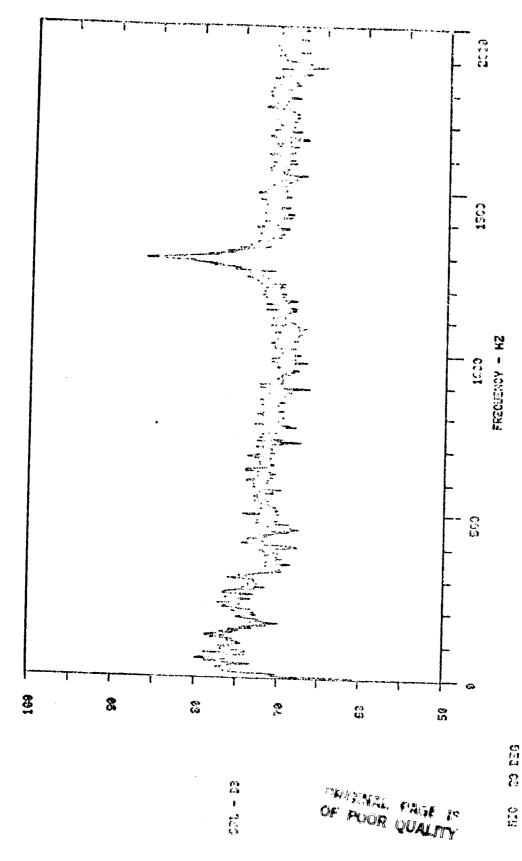
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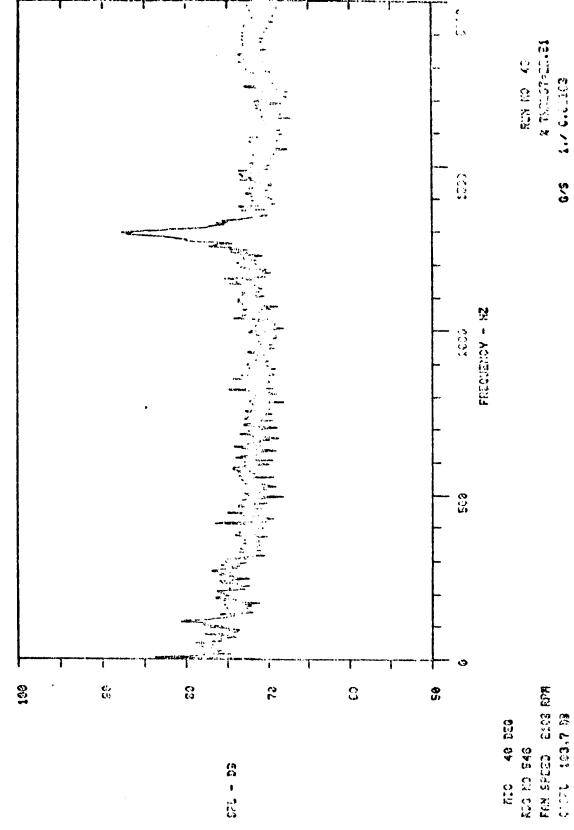
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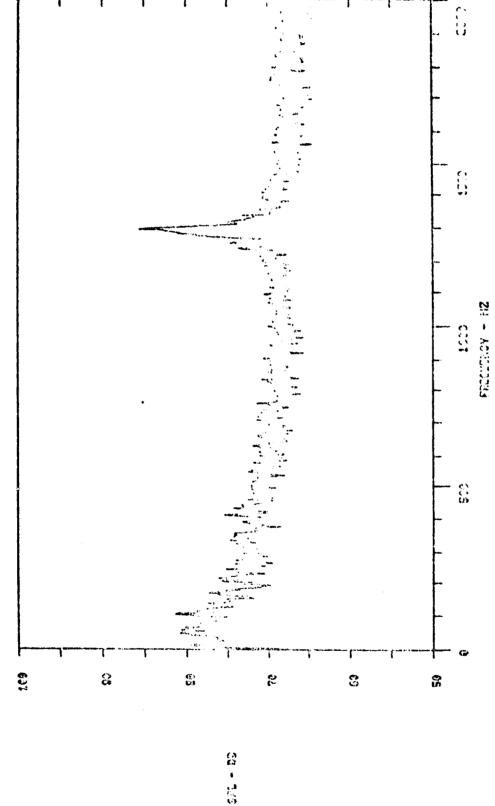
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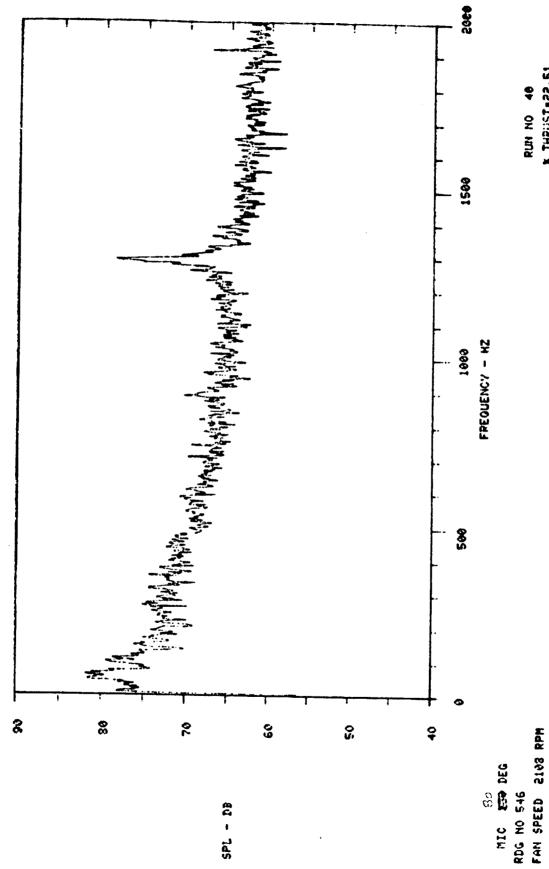


ALM NO 40 675 1.7 G.C.1.C.

CFG-50 CORE MOISE PROGRAM.



Run 10 40

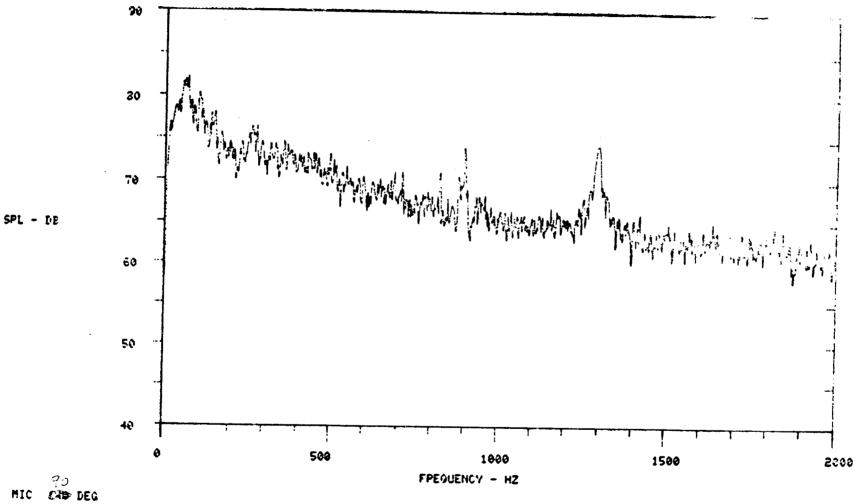


x THRUST-22.51

1./ 0.00103

045PL 180.0 DB

35/5R 4096/ 8192

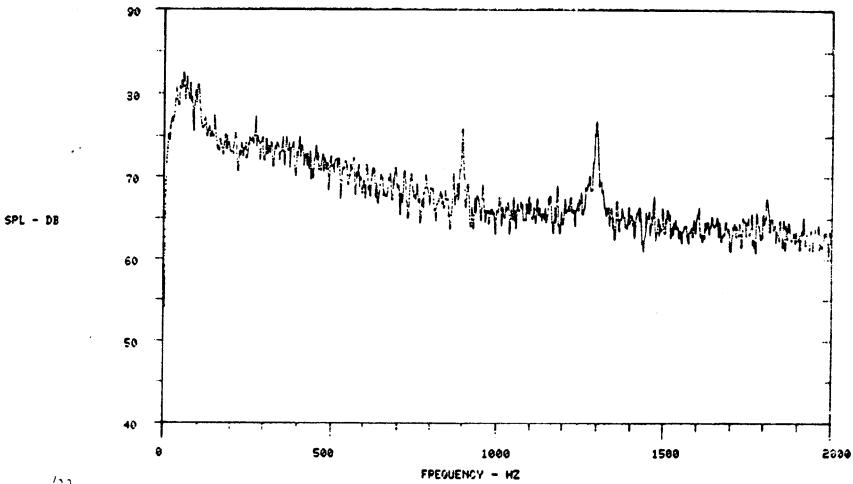


MIC £35 DEG RDG NO 546 FAN SPEED 2108 RPM GASPL 100.6 DB

PUN NO 40 % THRUST-22.51 G/S 1./ 0.00103

BS/SR 4096/ 8192

-

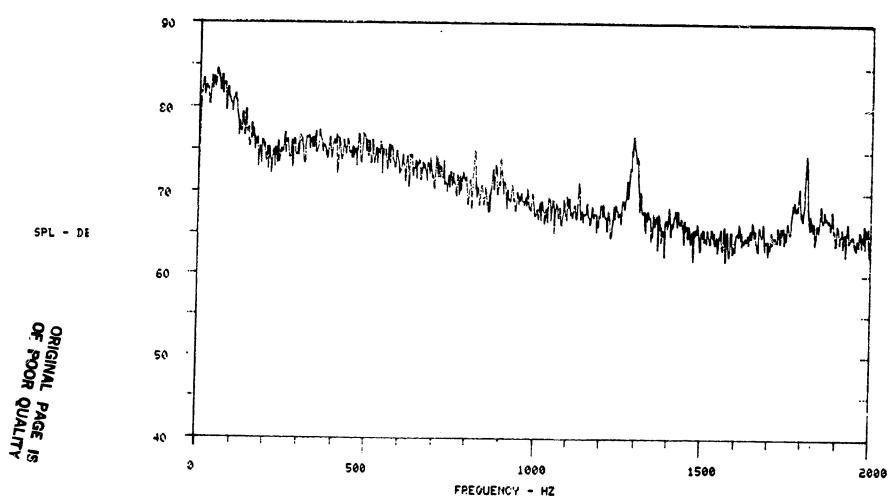


/20 MIC **€€ DEG** RDG NO 546 FAN SPEED 2108 RPM CASPL 101.6 DB

* THRUST-22.51 1./ 0.00103 35/69 4098/ 3198

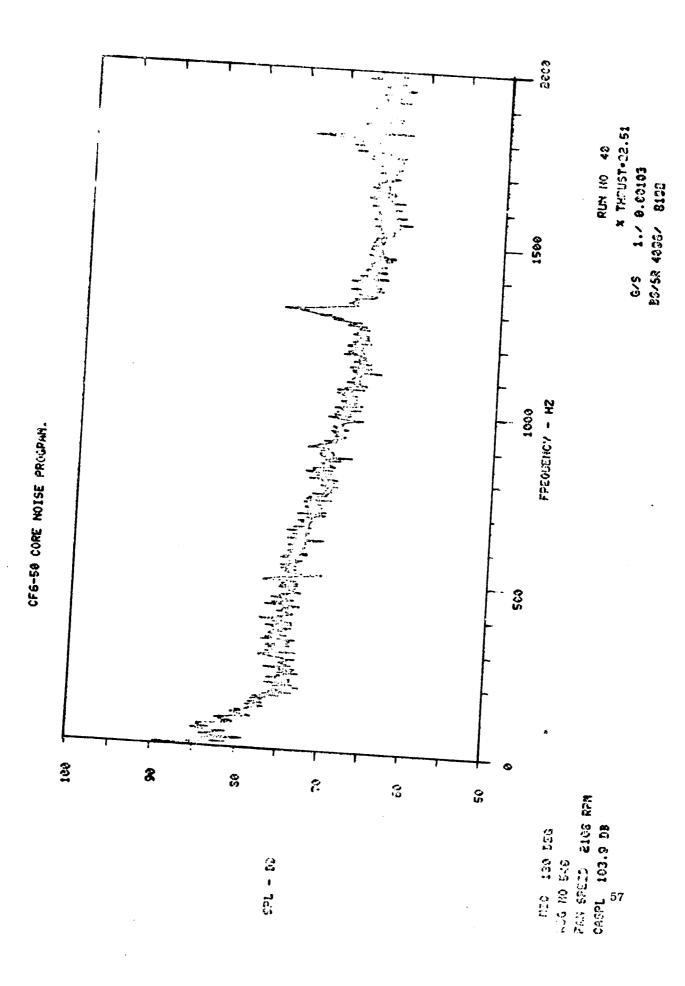
CF6-50 CORE NOISE PPOGRAM

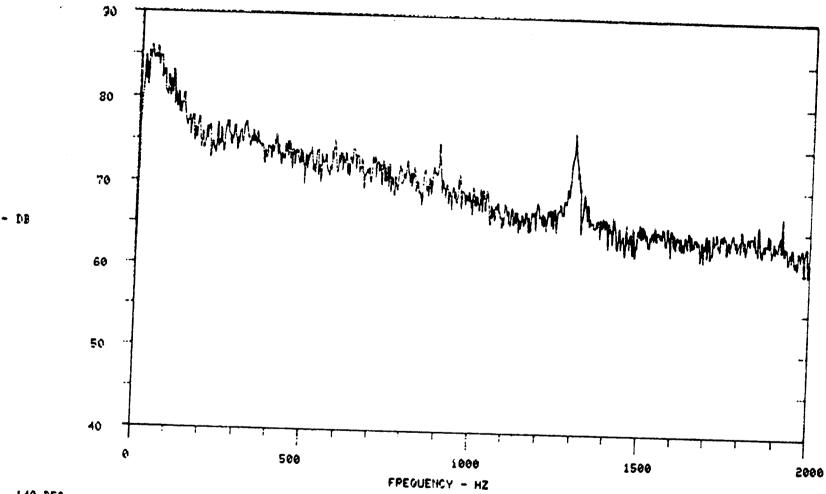
CF6-50 CORE NOISE PROGRAM.



MIC 120 DEG RDG NO 546 FAN SPEED 2108 RPM OASPL 103.6 DB

PUN NO 40 * THRUST-22.51 G/S 1./ 0.00103 BS/SR 4096/ 8192





MIC 140 DEG RDG NO 546 FAN SPEED 2108 RPM OASPL 103.7 DB

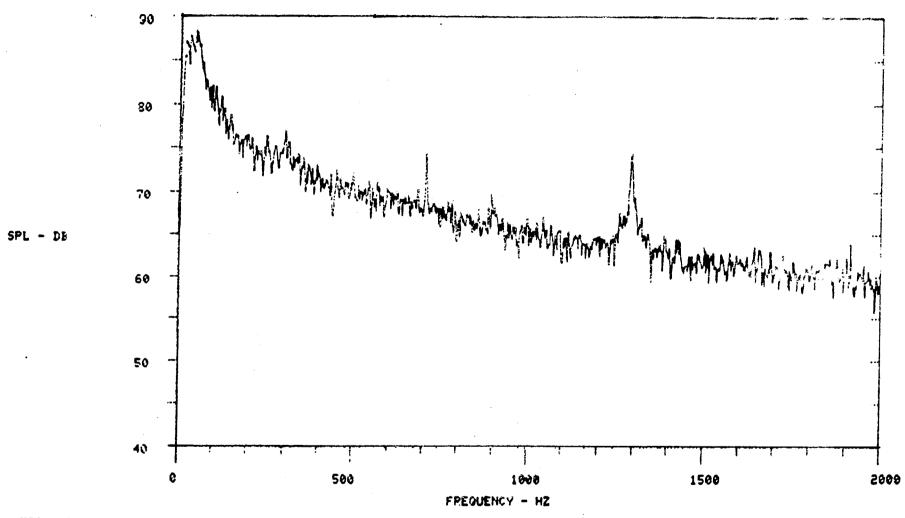
RUN NO 46 * THRUST-22.51 G/S 1./ 0.00103 BS/SR 4096/ 8192

SPL - DB

R

VA:

CF6-50 CORE NOISE PROGRAM.

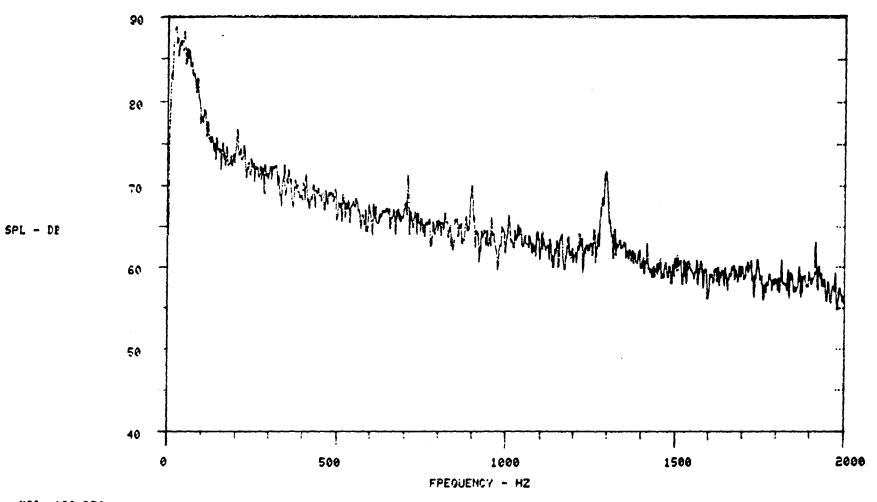


MIC 150 DEG RDG NO 546 FAN SPEED 2108 RPM OASPL 103.8 DB

RUN NO 40 % THRUST=22.51 % 1./ 0.00103

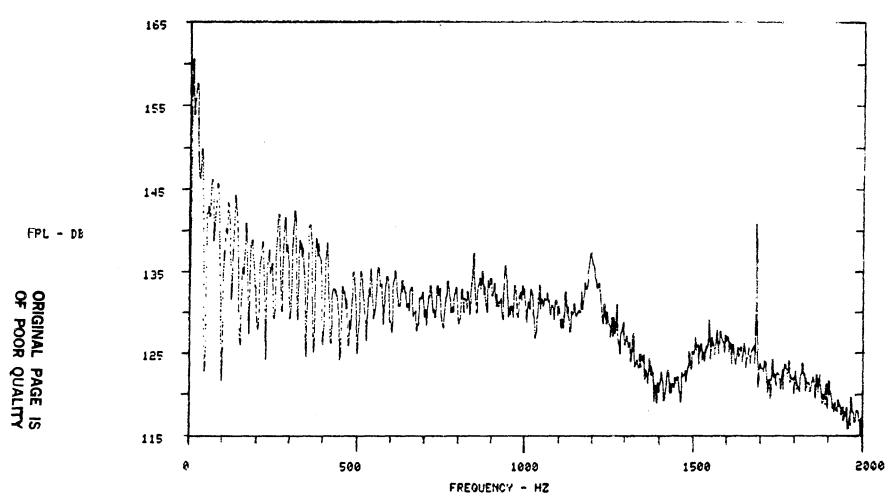
BS/SR 4036/ 8192

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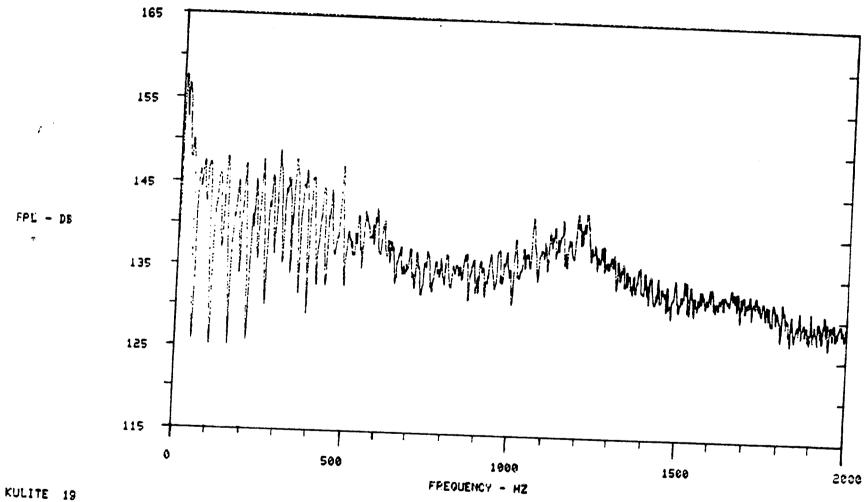
MIC 160 DEG RDG NO 546 FAN SPEED 2108 RPM OASPL 103.1 DB

RUH NO 48 x THRUST=22.51 G/S 1./ 8.88193 BS/SR 4896/ 8192



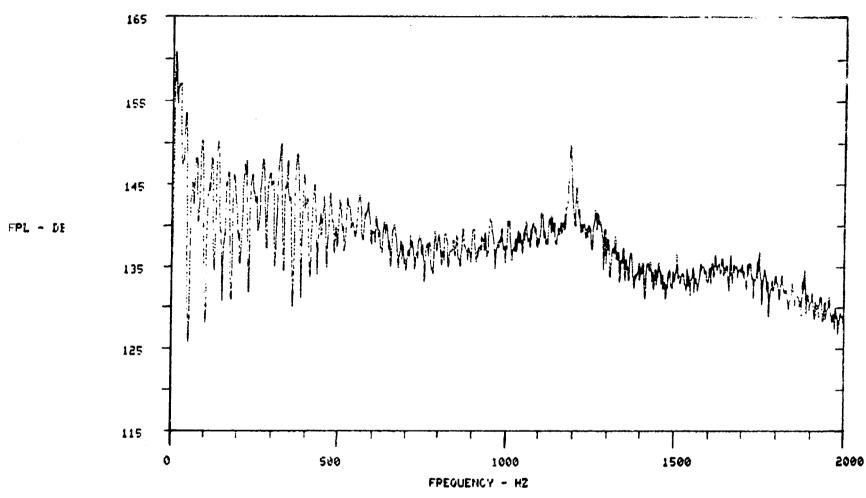
KULITE 18 RDG NO 551 FAN SPEED 2350 RPM OAFPL 169.0 DB

RUN NO 2 * THRUST-30.83 G/S 1./ 2.60000 BS/SR 4095/ 8192



RDG NO 551
FAN SPEED 2350 RPM
OAFPL 170.7 DB

PUN HO 2 * THRUST-39.83 G/S 1./ 2.00600 B\$/SR 4096/ 8192

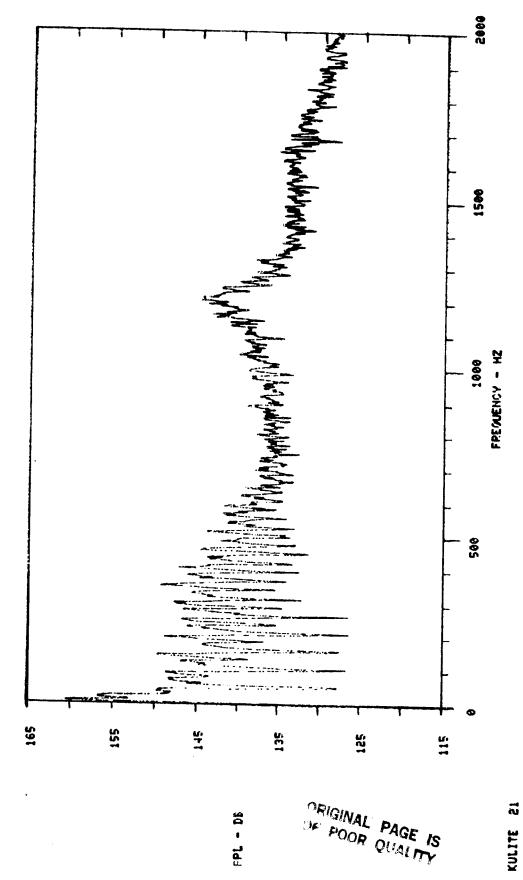


KULITE 20 RDG NO 551 FAN SPEED 2350 RPM OAFPL 172.1 DB

RUN NO 2 X THRUST-30.83 G/S 1./ 2.00000 BS/SR 4096/ 8192

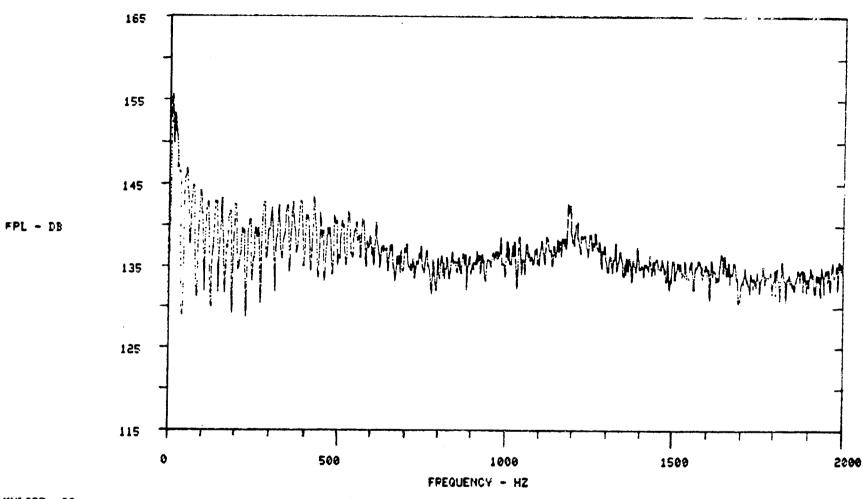
63

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RUTH NO 2 * THRUST-30.83 Q/S 1.7 2.00990 35/5R 4096/ 8192

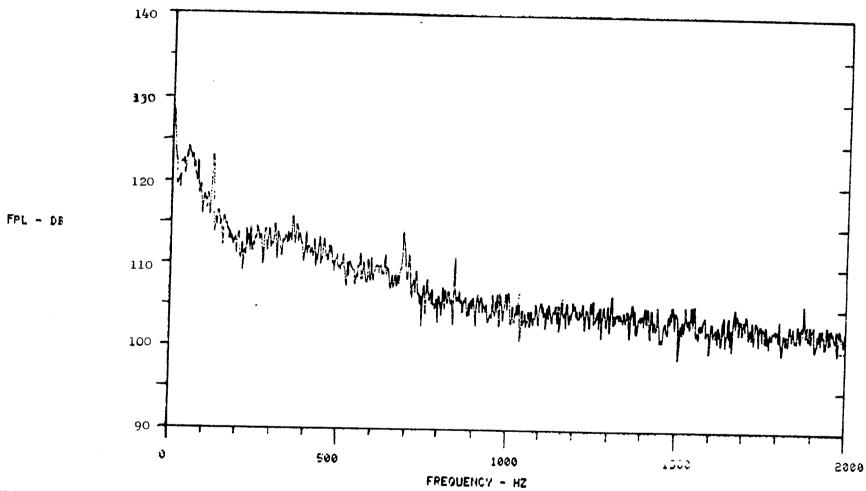
RDG NO SSI FAN SPEED 2350 RPM CAFPL 171.4 DB



KULITE 22 RDG NO 551 FAN SPEED 2356 RPM OAFPL 168.6 DB

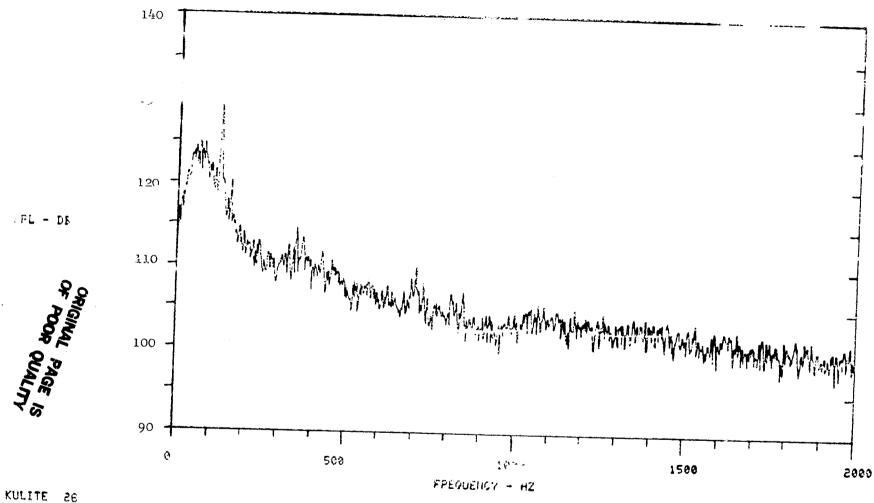
RUN NO 2 % THRUST-36.83 G/S 1./ 2.09000

BS/SR 4096/ 8192



KULITE 24 RDG NO 551 FAN SPEED 2350 RPM OAFPL 142.1

RUN NO 2 * THPUST-30.83 G/S 1./ 2.00000 BS/SR 4096/ 8192

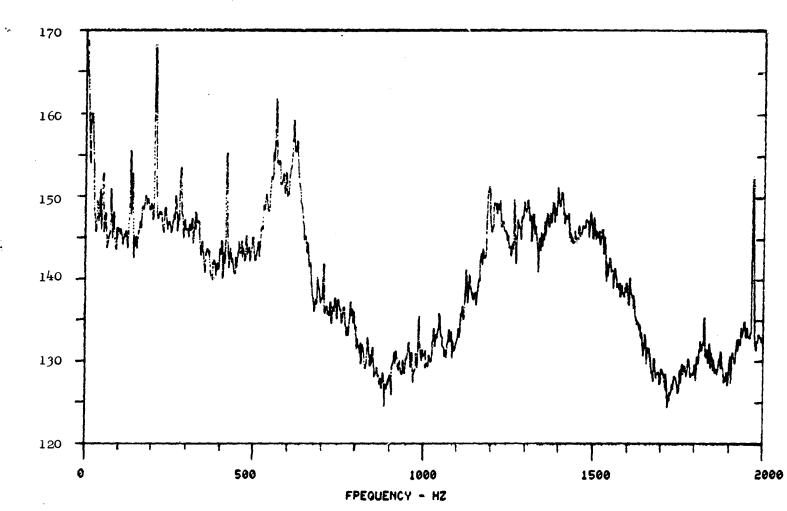


KULITE 26
REG HO 97
FON SPEED 2350 RPM
QAEDY 110

* THRUST-30.83

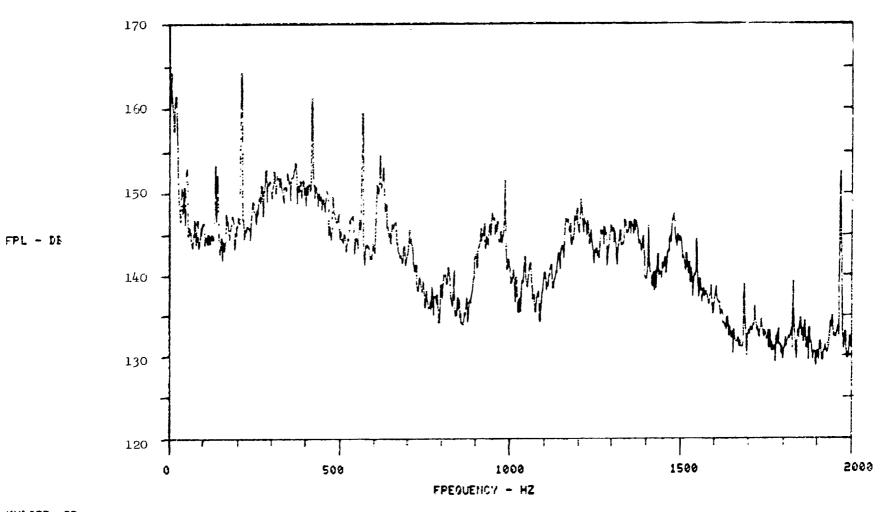
G/S 1./ 1.00000

BS/SR 4896/ 8192



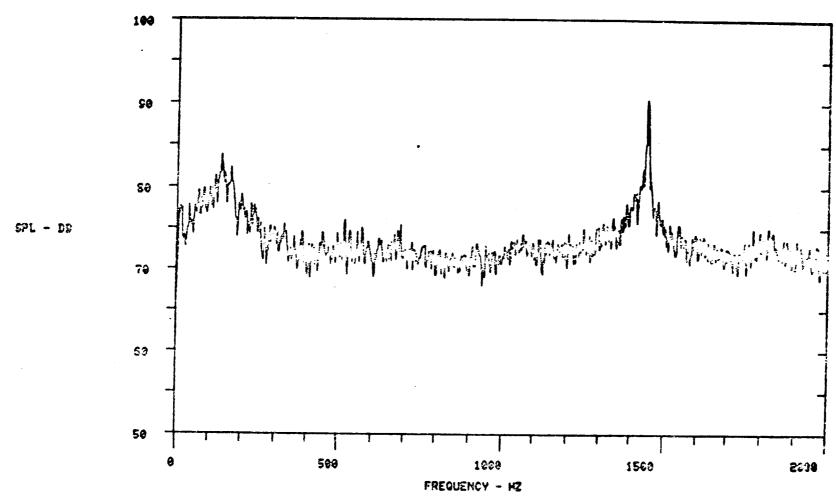
KULITE 23
RDG MO 551
FAN SPEED 2350 RPM
OAFPL 179.3 DB

RUN NO 2 * THRUST-30.83 G/S 1./ 0.50000 BS/SR 4096/ 8192



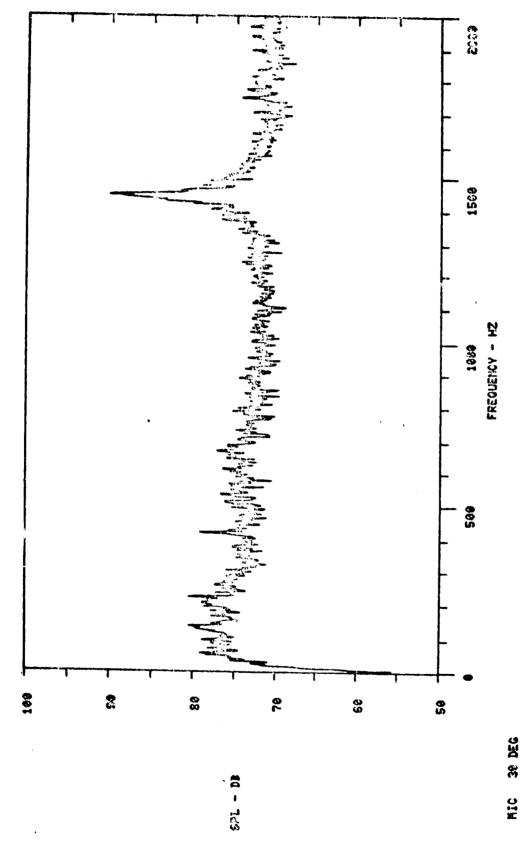
RULITE 25 RDG NO 551 FAH SPEED 2350 RPM CAFPL 177-3 DB

RUN NO 2 % THRUST-30.83 G/S 1./ 0.50000 B5/SR 4096/ &192



RIC 10 DEG RDG NO 551 FAN SPZED 2358 RPM CASPL 104.9 DB

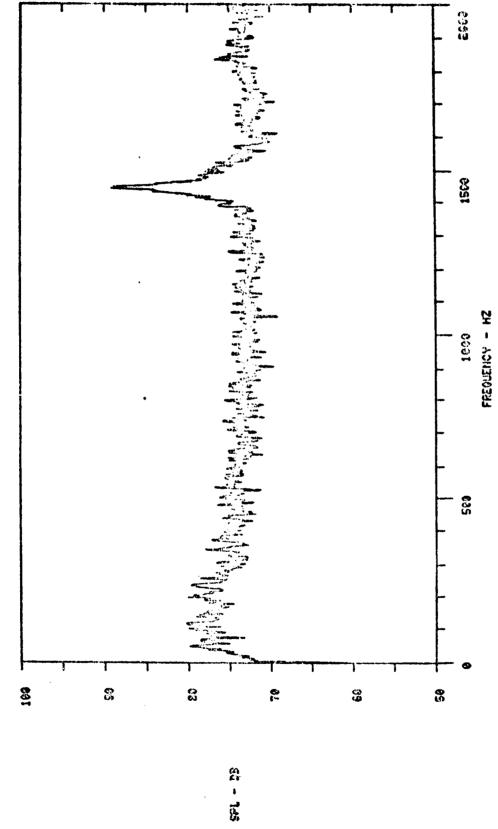
R2N NO 2 % THRUST-30.83 G/S 1./ 0.00103 BS/SR 4008/ 8192



RDG NO 551 FAN SPEED 2350 RPM 80 8 981 18080 71

* THAUST-39.83 6/5 1./ 0.03183 86/58 (CG/ 8183 .

FCN 75



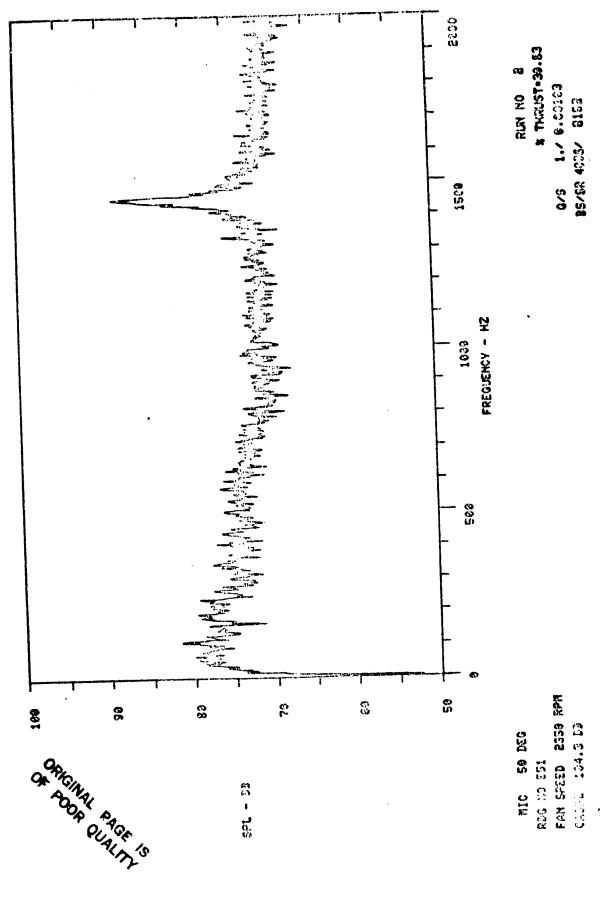
RUM NO 2 X THRUST-33.53 85/58 4086/ 8162

RDG NO 551 FAN SPEED 2338 RPM

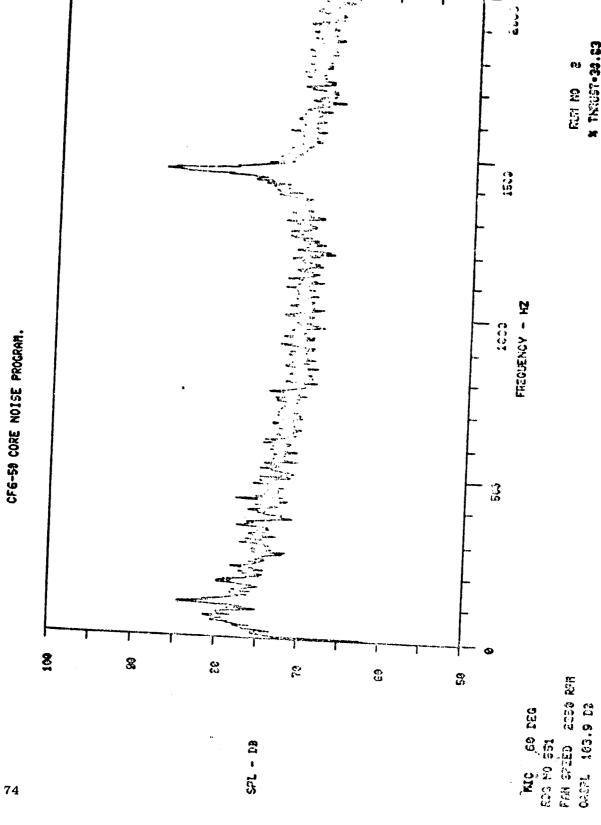
48 DEG

CASPL 185.4 DB

72



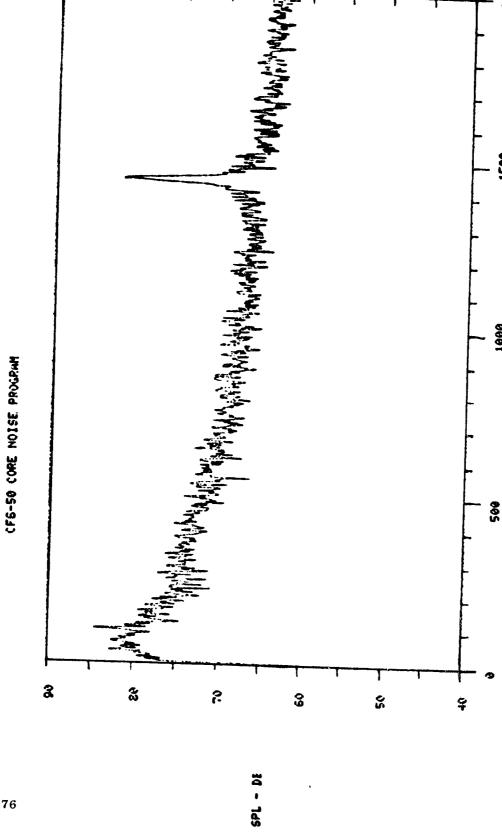
73



REAL NO B

6/8 1./ 0.03103 15/57 4698/ 8162

CF6-59 CORE NOISE PROGRAM



* THRUST-30.83 1.7 0.00102 35/5R 4696/ 8192

PUN NO 8

1500

FREGUENCY - HZ

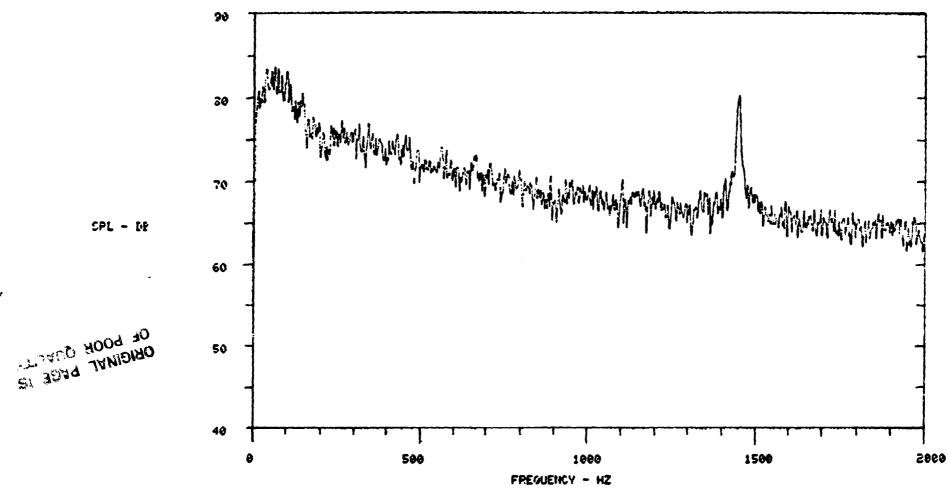
RDG NO 551 FMN SPEED 2350 RPM OMSPL 102.3 DB

MIC 84 DEG

1000

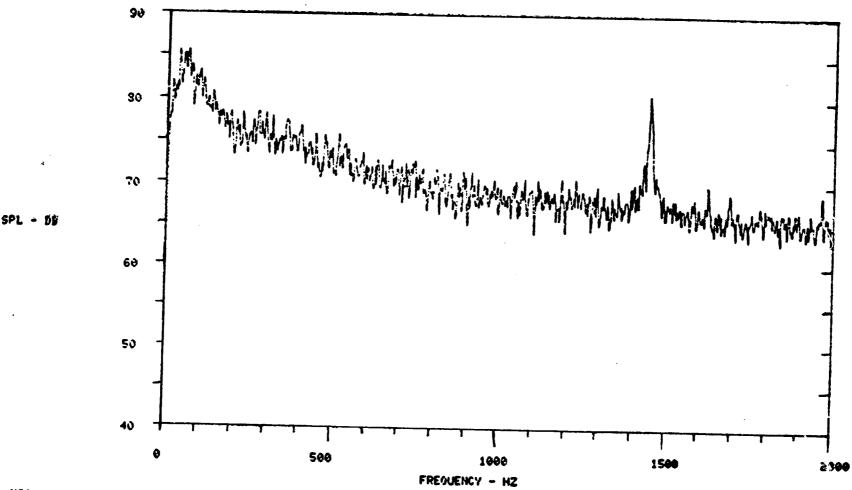
76

CF6-50 CORE NOISE PROGRAM



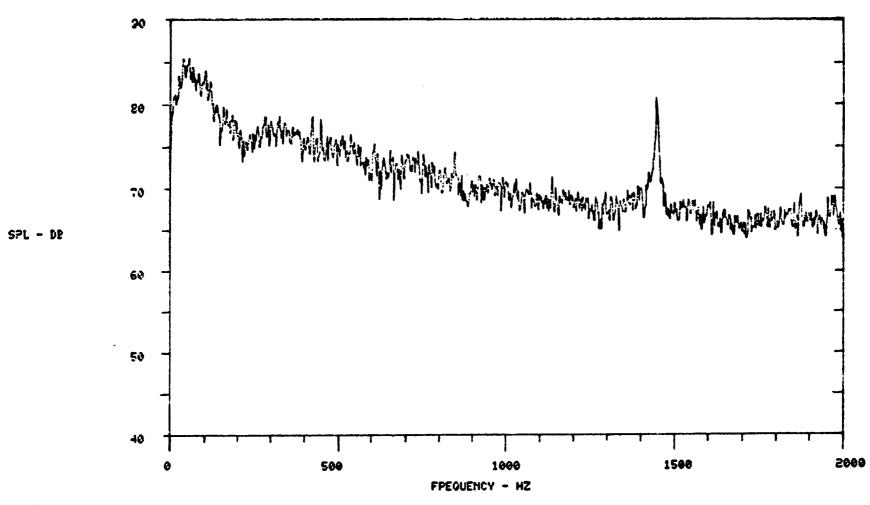
MIC 90 DEG RDG NO 551 FAN SPEED 2350 RPM OASPL 102.9 DB

RUN HO x THRUST-30.83 1./ 0.00103 BS/SR 4096/ 8192



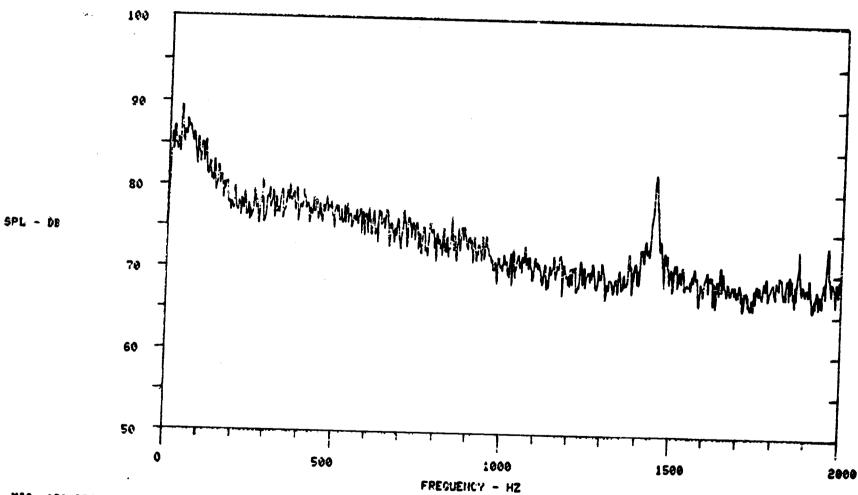
NIC 100 DEG RDG NO 551 FAN SPEED 2350 RPM OASPL 103.6 DB

RUN NO 2 % THRUST-30.83 G/S 1./ 0.00103 RS/S9 4006/ 8103 CF6-50 CORE NOISE PROGRAM



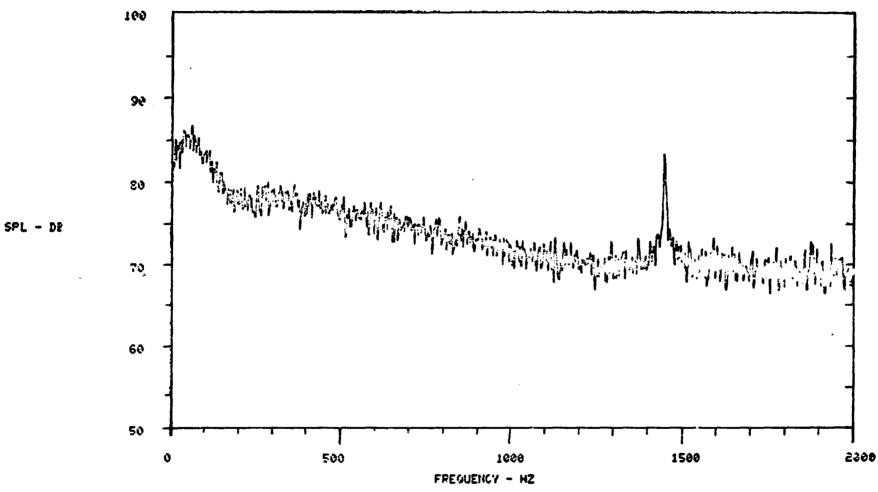
MIC 110 DEG RDG NO 551 FAN SPEED 2350 RPM OASPL 104.4 DB 79

RUN NO 3 * THRUST-30.83 0.60103 89/SR 4096/ 8192



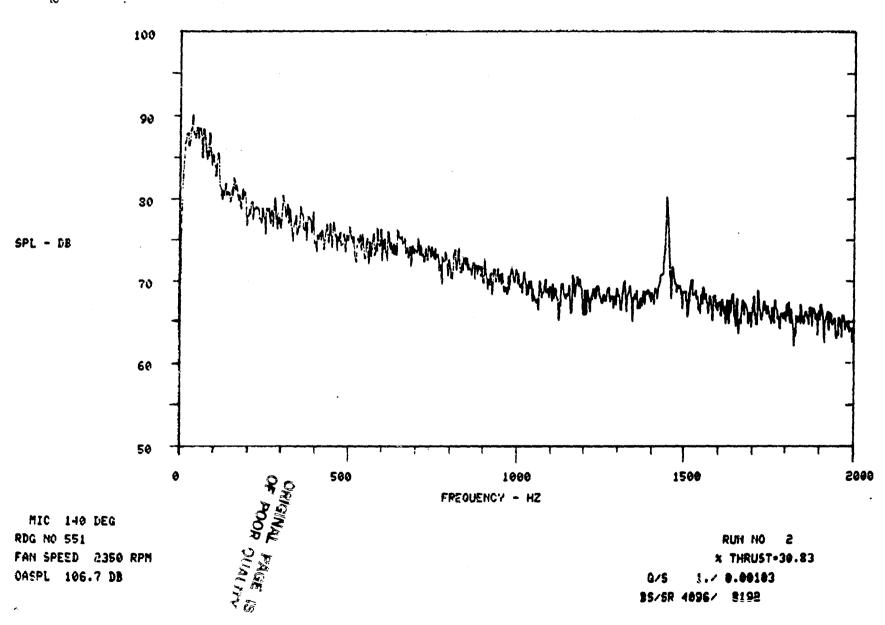
MIC 120 DEG RDG NO 551 FAN SPEED 2350 RPM CASPL 106.6 DB

RUN NO 2 % THRUST=30.83 G/\$ 1./ 0.00103 BS/SR 4096/ 2192

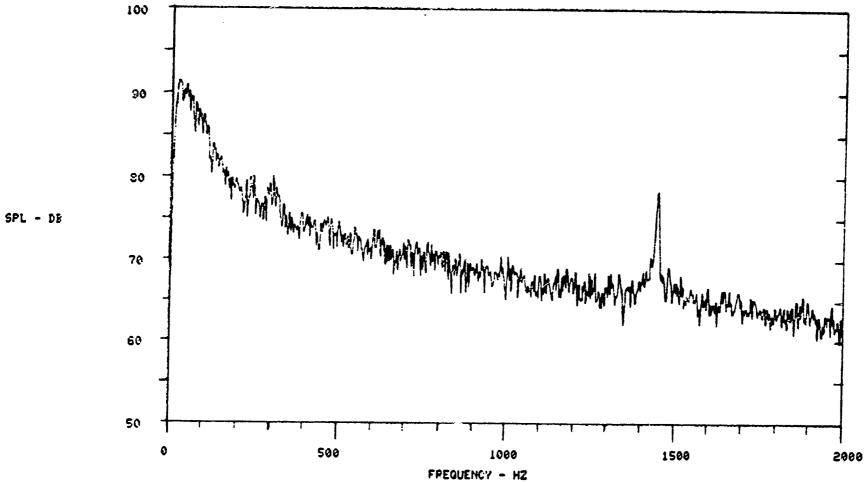


MIC 130 DEG PDG NO 551 FAN SPIED 2050 RPM 0ASPL 106.2 DB 81

RUN HO 2 . # THRUST-30.83 BS/SR 4096/ 8192



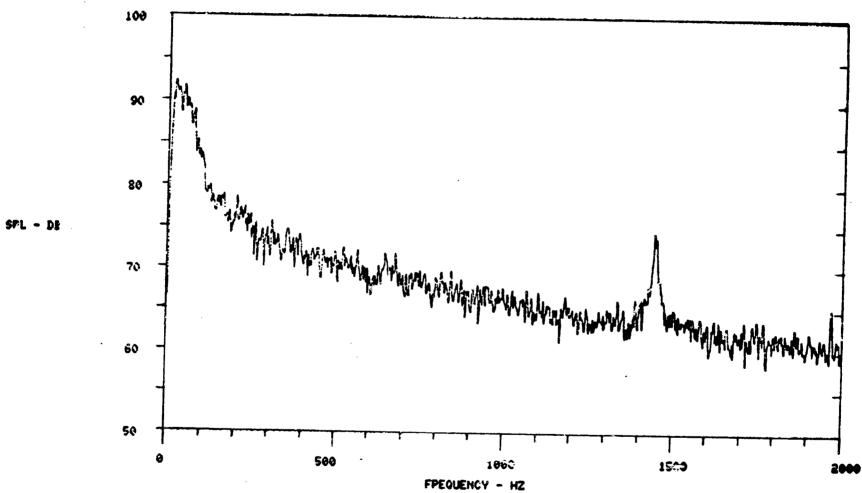
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MIC 150 DEG RDG NO 551 FAN SPEED 2350 RPM OASPL 107.5 DB

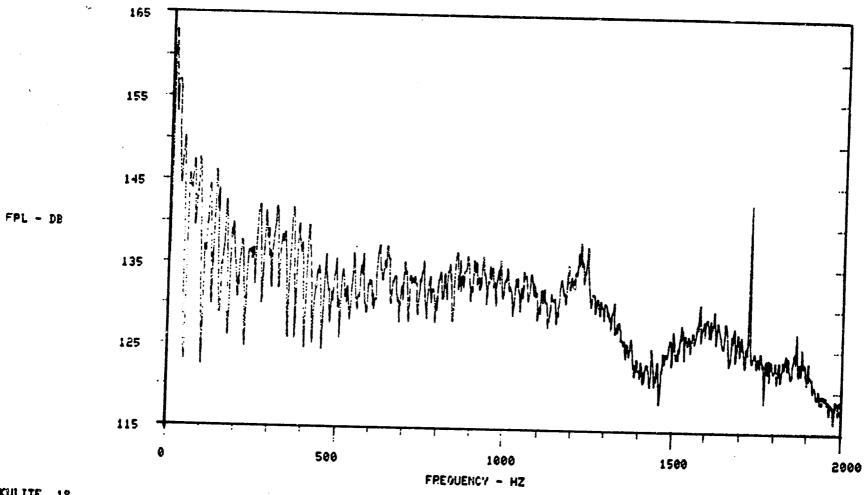
RUN NO 2 % THRUST-30.83 G/C 1./ 0.00103 BS/SR 4696/ 8192

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MIC 160 DEG RDG NO 551 FAN SPEED 2350 RPM OASPL 106.7 DB

RUN HO 2 % THRUST-30.83 G/S 1./ 0.00103 BS/SR 4036/ 8192 (

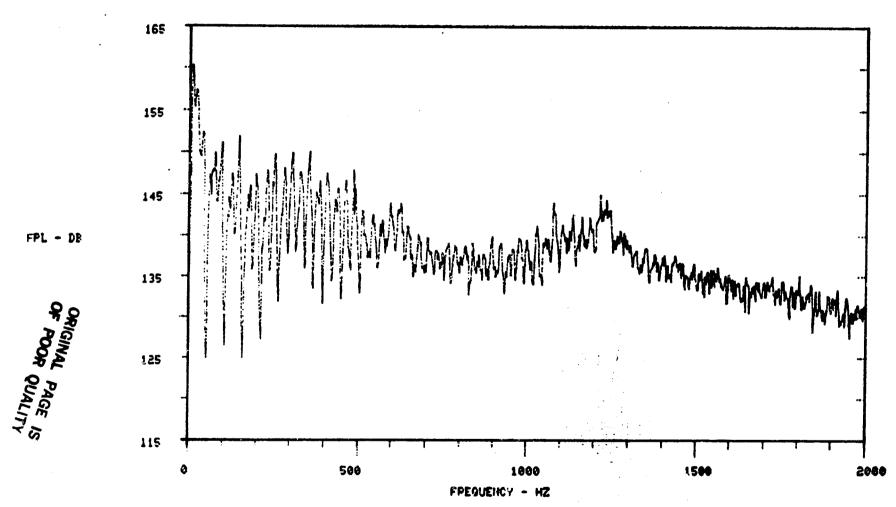


KULITE 18 RDQ HO 557 FAN SPEED 2544 RPM OAFPL 169.9 DB

RUN NO 5 % THRUST-36.55 G/S 1./ 5.00090 BS/SR 4096/ 8198

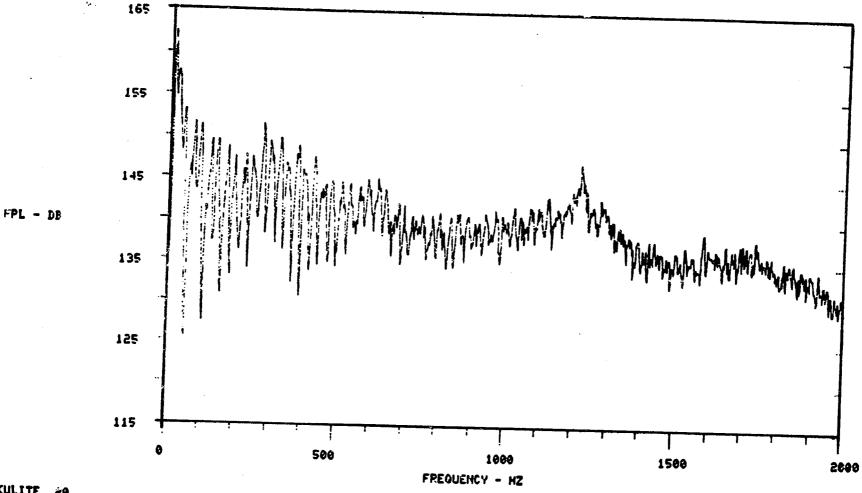
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CF6-50 CORE NOISE PROGRAM.



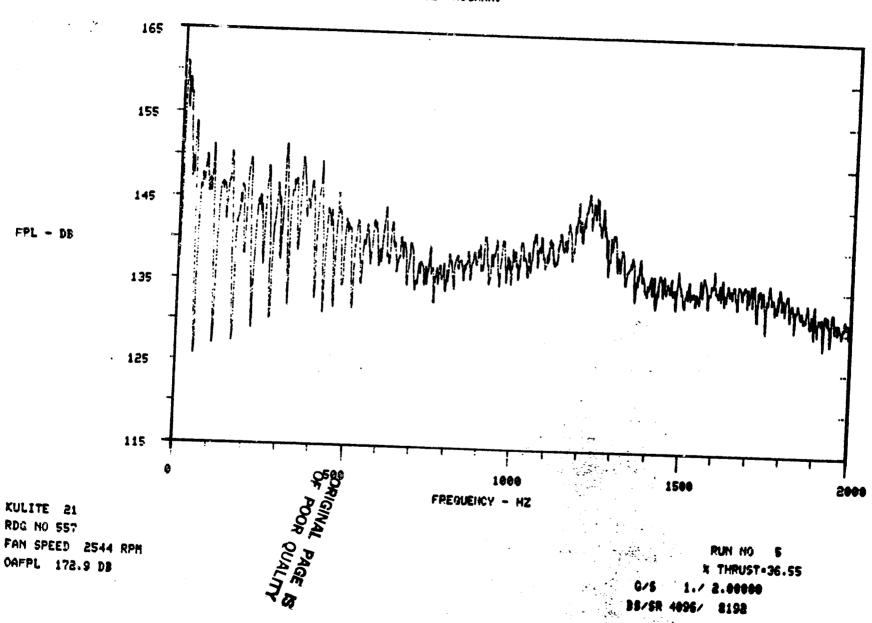
KULITE 19 RDG NO 557 FAN SPEED 2544 RPM OAFPL 172.3 DB

RUN NO 5 % THRUST-36.55 Q/S 1./ 2.00000 BS/SR 4096/ 8192

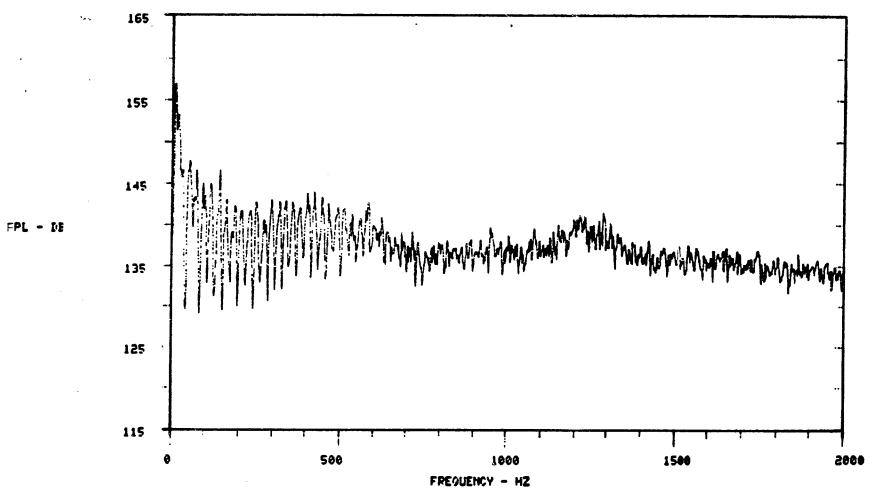


KULITE 20 RDG NO 557 FAN SPEED 2544 RPM OAFPL 173.2 DR 87

RUN HO * THRUST=36.55



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KULITE 22 RDG NO 557 FAN SPEED 2544 RPM OAFPL 169.5 DB

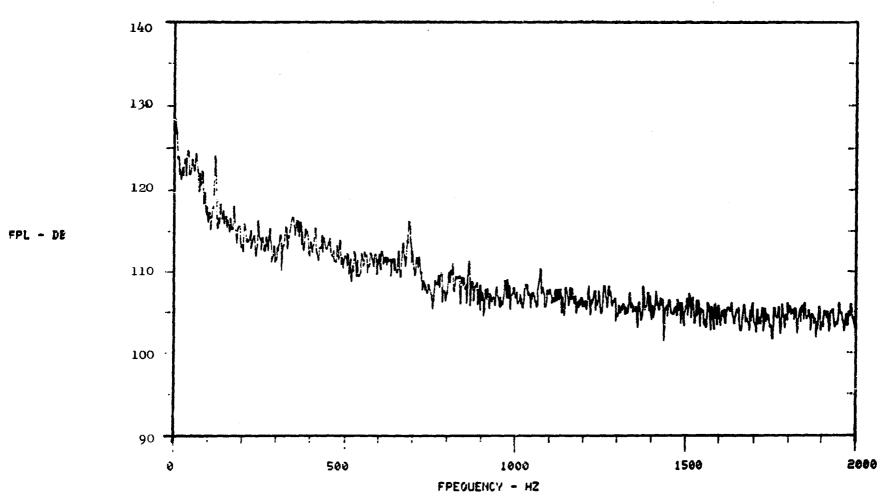
RUN NO 5 % THRUST-36.55 G/S 1./ 2.00000 B9/SR 4006/ 8192

89

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90

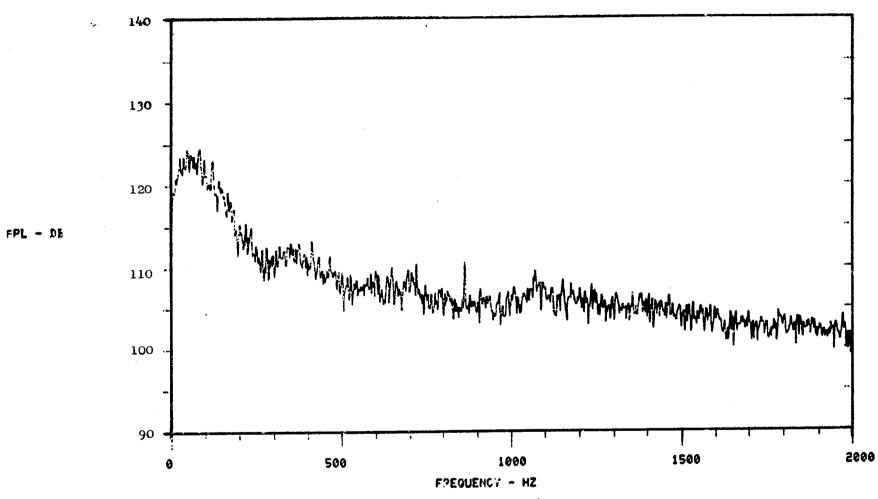
CF6-50 CORE NOISE PROGRAM



KULITE 24 RDG NO 557 FAN SPEED 2544 RPM CAFPL 143.1 DB

PUN NO 5 * THRUST-36.55 G/S 1./ 2.00000 BS/SR 4096/ 8192

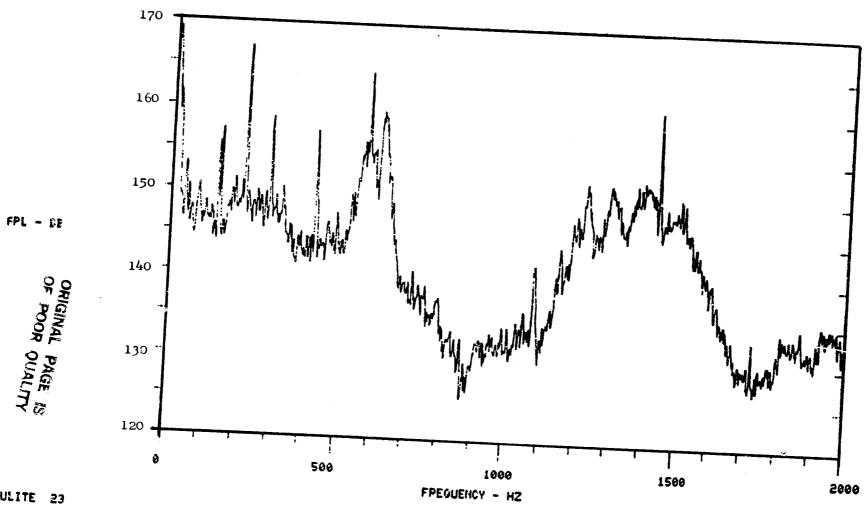
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KULITE 26 RDG NO 557 FAN SPEED 2544 RPM OAFPL 142.3 DB

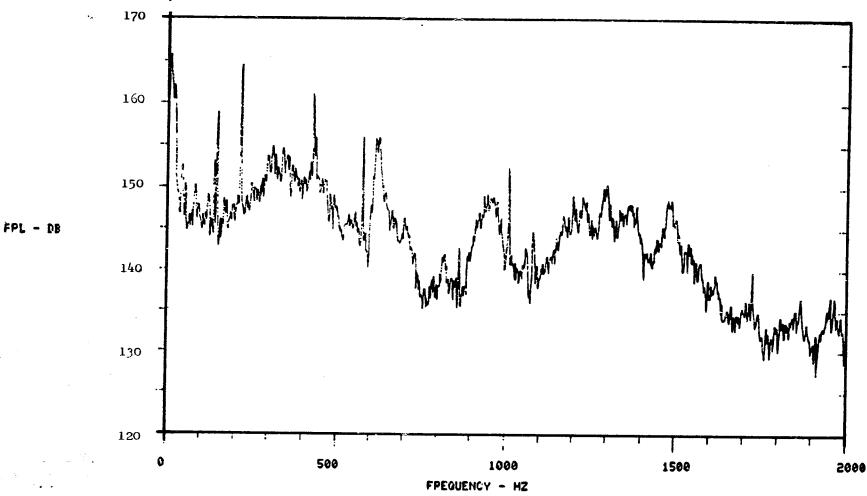
RUN NO 5 % THPUST-36.55 G/S 1./ 1.00000 S/SR 4096/ 8192

91



KULITE 23 RDG NO 557 FAN SPEED 2544 RPM OAFPL 180.7 DB

RUN NO 5 % THRUST-36.55 G/S 1./ 1.00000 BS/SR 4096/ 8192

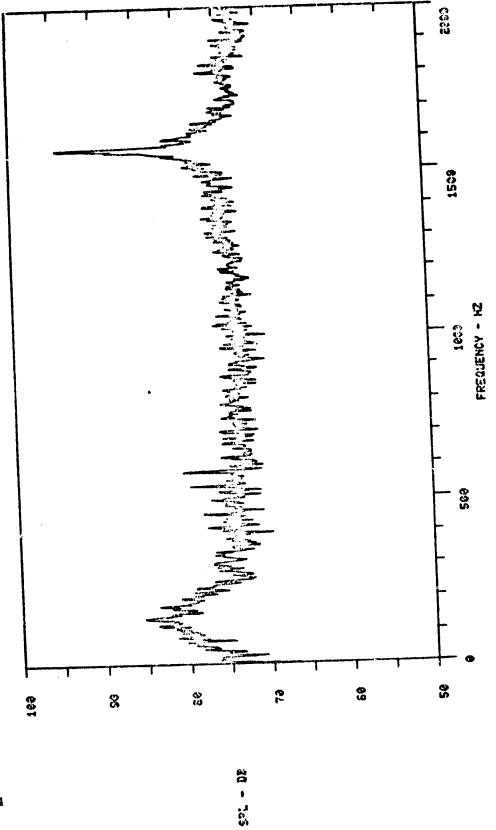


KULITE 25 RDG NO 557 FAN SPEED 2544 RPH OAFPL 178.5 DB

RUN NO * THRUST-36.55 1./ 0.50000 G/5 BS/SR 4896/ 8192

93

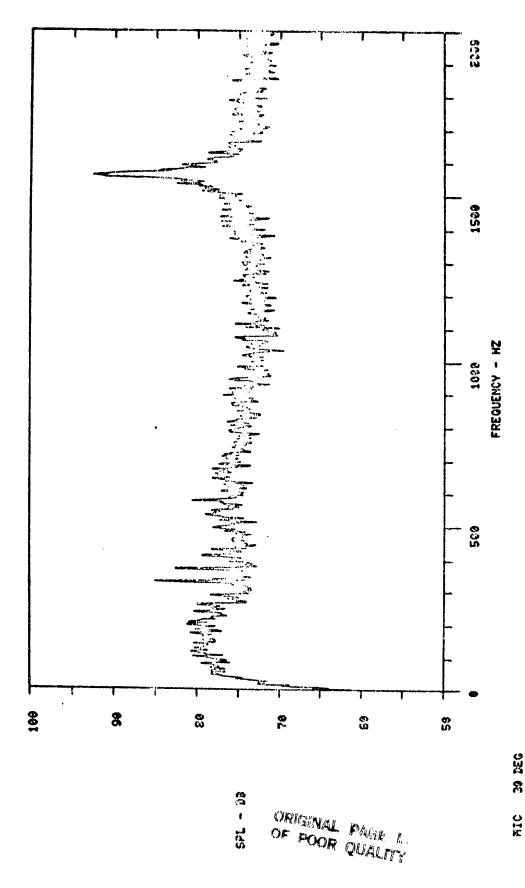
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RUN NO 5 x Triust-25.45 0/6 1./ 6.63325

RIC 19 DEG RDG NO 557 FAN SPEED 2544 RPM CASPL 196.8 D3

94



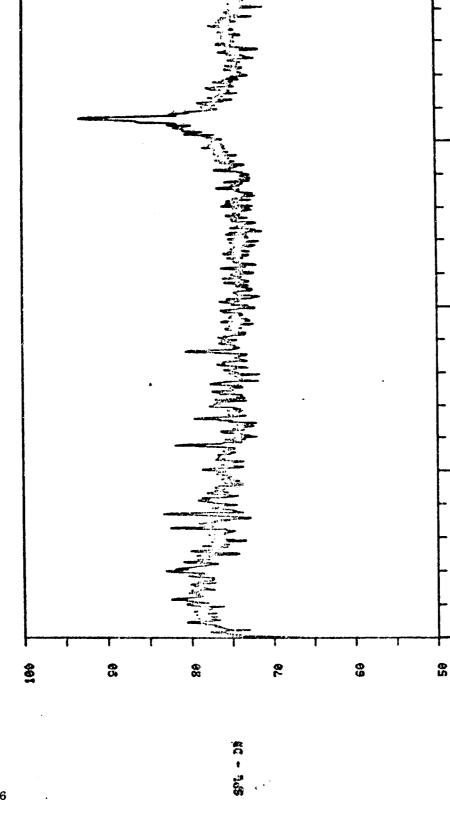
RUN NO 6 N THRUST-38.55

0/S 1./ 8.60333 89/S3 4096/ 8193

95

FAX SPECT 2544 RPH OASPL 168.9 DB

RDG NO 557



RUN NO 5 x THRUST-33.55 9/8 11.7 0.00325 88/88 4969 8198

85 28

15e3

FREGUENCY - HZ 1669

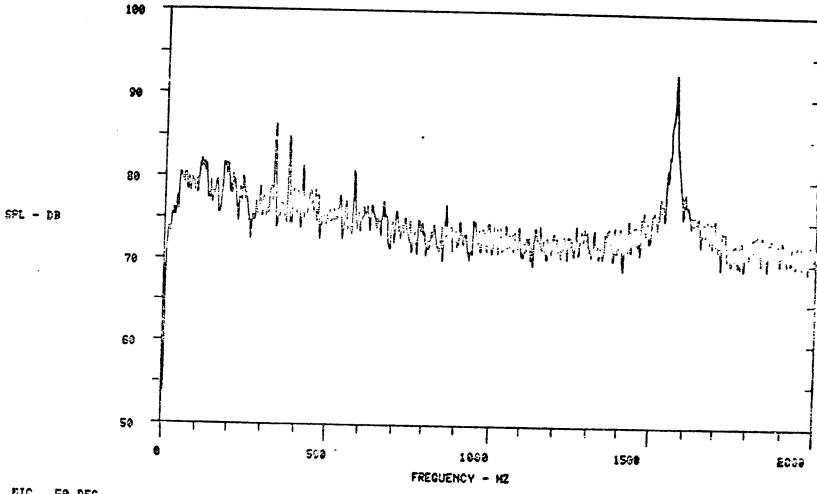
580

MIC 40 DEG ND3 NO 557 FAN SPEED 2544 KPM

CASPL 197.1 DB

96

CF6-50 CORE NOISE PROGRAM.



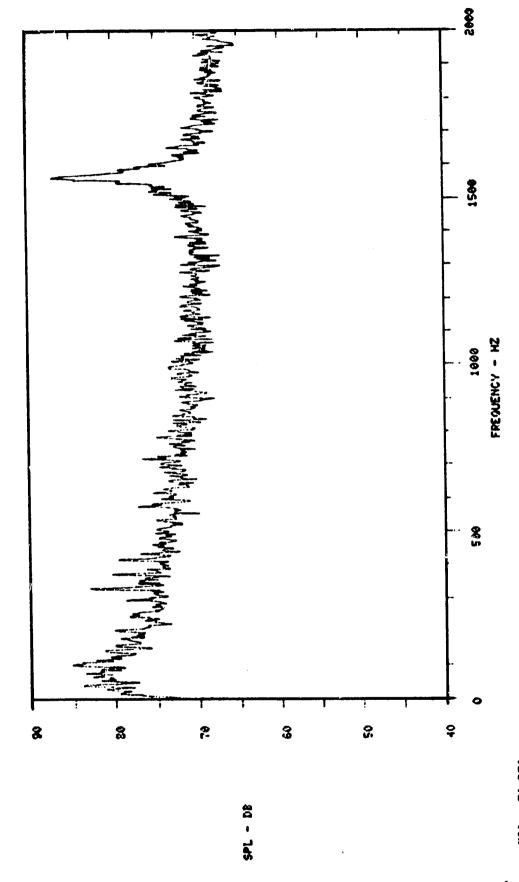
FIC 50 DEG RDS NO 557 FAN SPEED 2544 RPM 0ACFL 106.2 DB 97

* TRUST-38.55 1./ 8.00225 BB/SR 4003/ 8553

* THRUST-33.65 RUN 160

FREQUENCY - MZ

MIC 66 DEG RDG NO 557 FAN SPEED 2544 RPM COOPL 165-8 DB

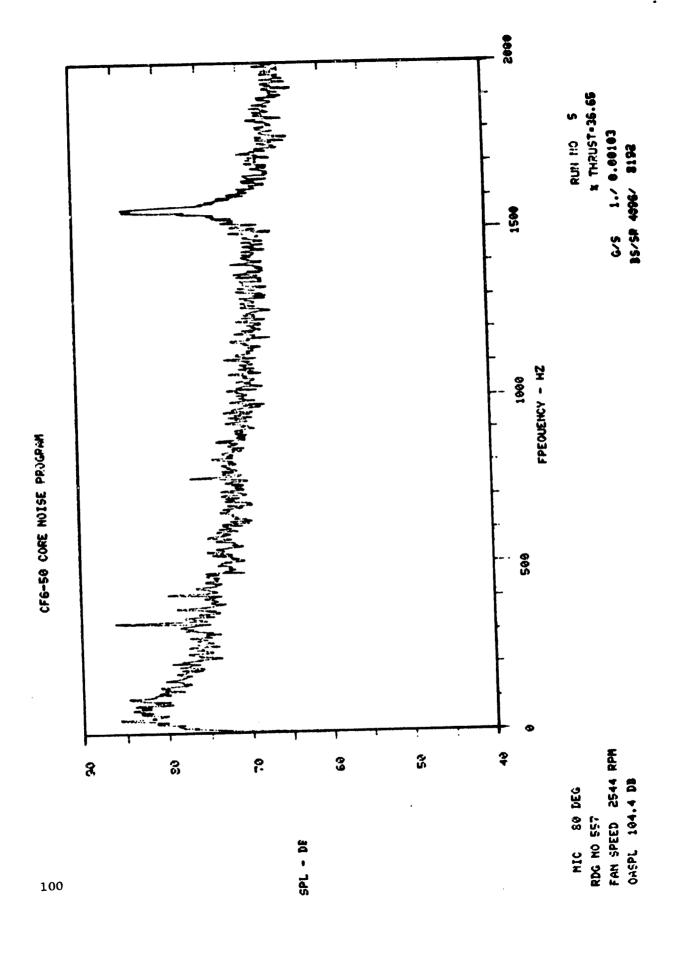


MIC 70 DEG RDG NO 557 FAN SPEED 2544 RPM OASPL 104.8 DB

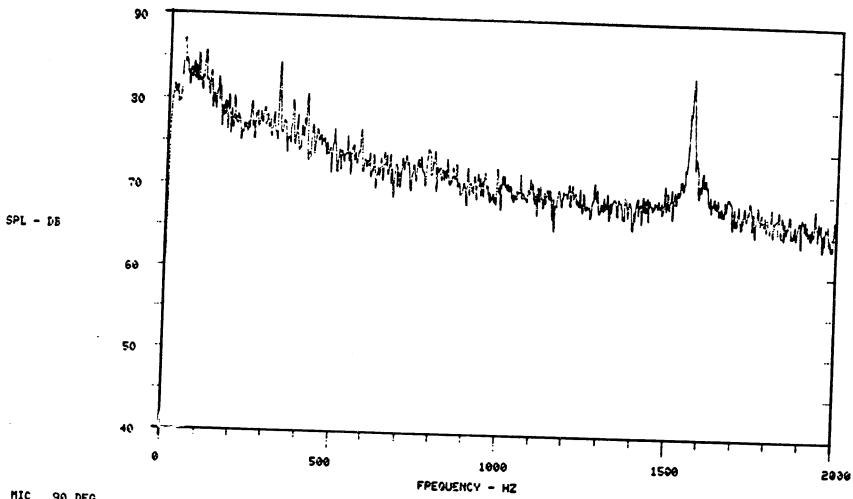
1./ 0.00325

RUN NO 5 % THRUST-36.65

35/SR 4096/ 8192



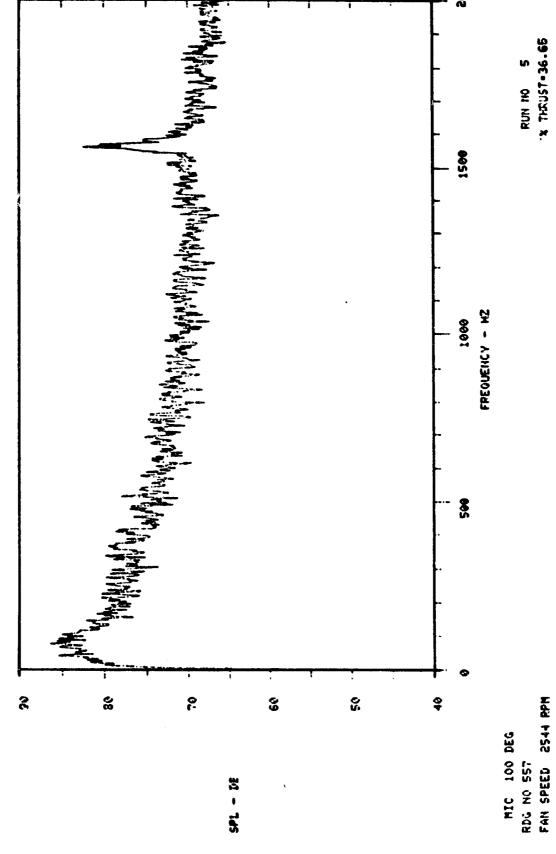
CF6-50 CORE HOISE PROGRAM



MIC 90 DEG RDG NO 557 FAN SPEED 2544 RPM OASPL 104.8 DB

PUN NO 5 % THRUST-36.65 G/S 1./ 0.00103 BS/SR 4096/ 8192

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RUN NO 5

1.7 0.00103

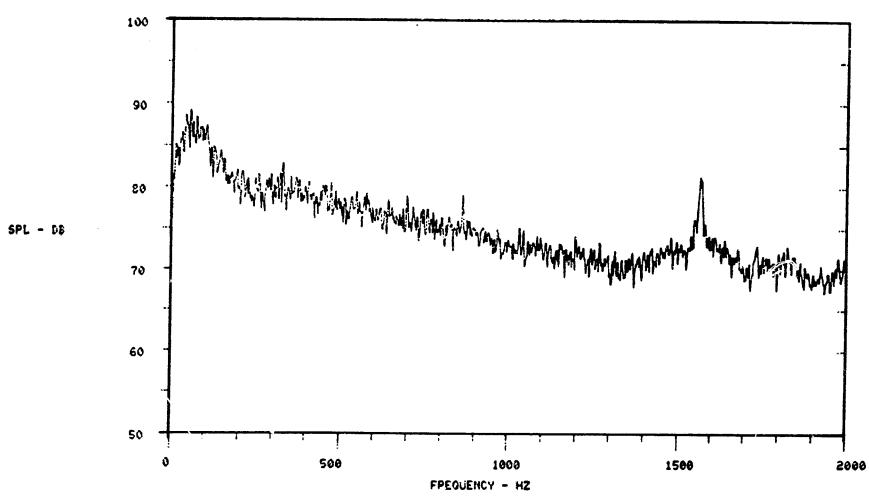
OASPL 105.2 DB

35/5R 4096/ 8192

102

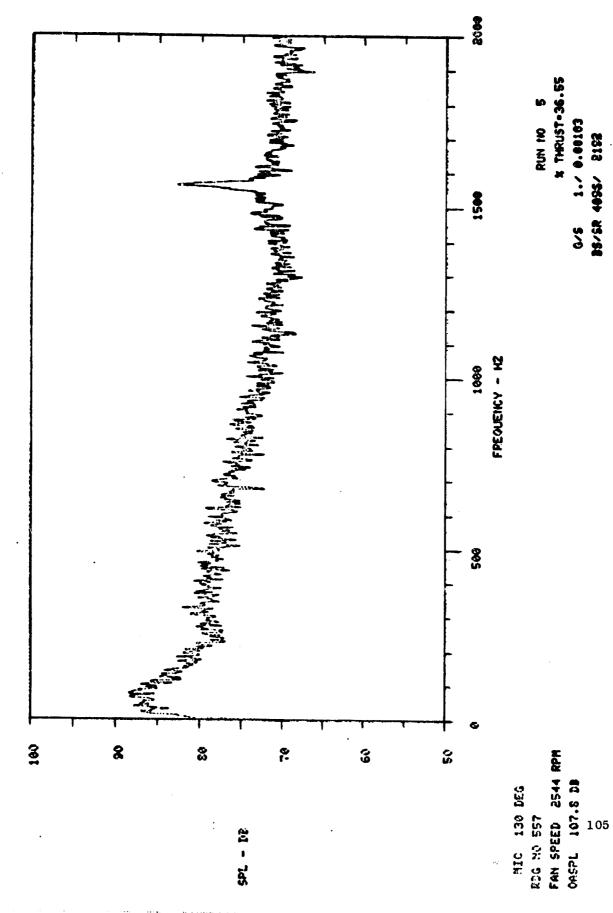
CF6-50 CORE NOISE PRUGRAM

1.7 0.60103 BS/SR 4096/ 8192

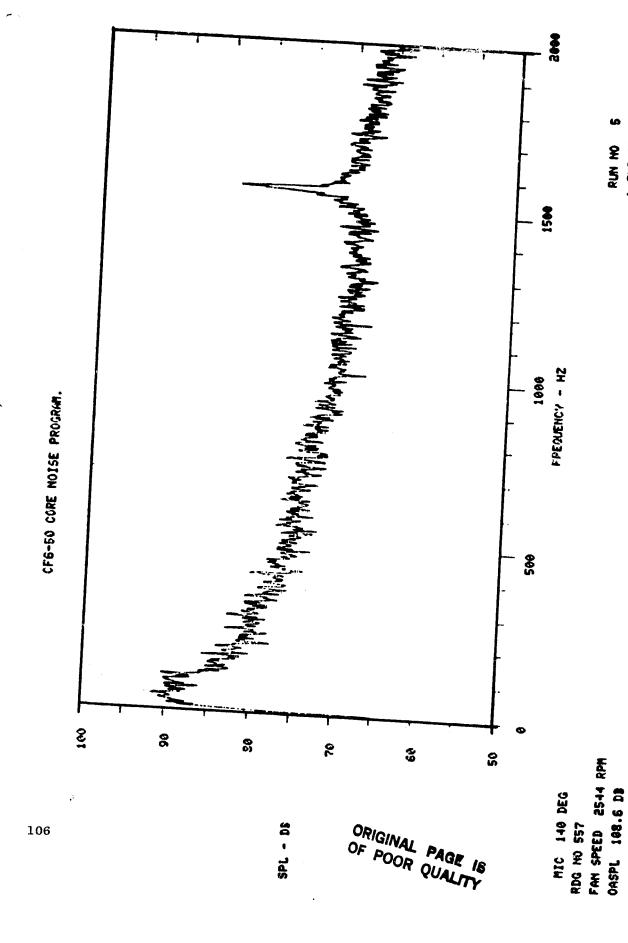


MIC 120 DEG RDG NO 557 FAN SPEED 2544 RPM OASPL 107.8 DB

RUN NO 5 % THRUST-36.55 G/S 1./ 0.00103 BS/SR 4096/ 8192

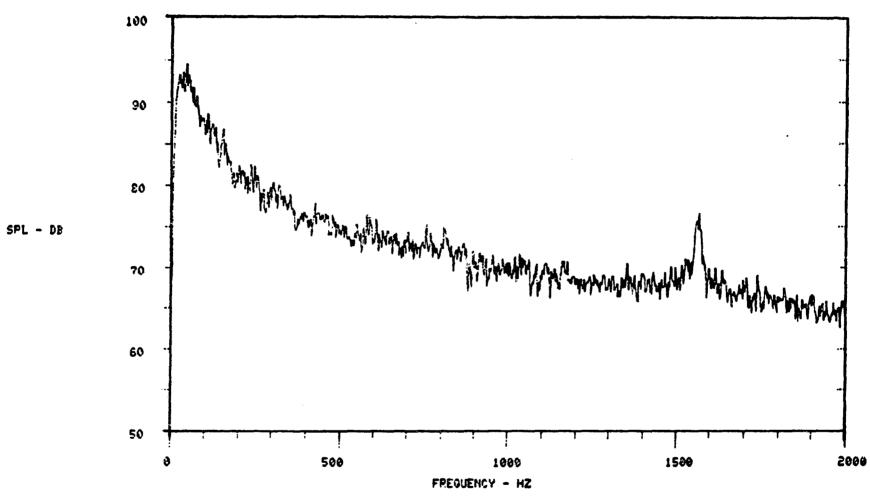


RUN 110 5 * THRUST-36.55 1./ 0.00103 BS/SR 4885/ 8192



RUN NO 5 % THRUST-36.55 G/S 1./ 0.00103 BS/SR 4086. 8192

CF6-50 CORE NOISE PROGRAM.



MIC 150 DEG RDG NO 557 FAN SPEED 2544 RPM OASPL 109.6 DB

RUN NO 5 % THRUST-36.55 G/S 1./ 0.00103 BS/SR 4096/ 8192

107

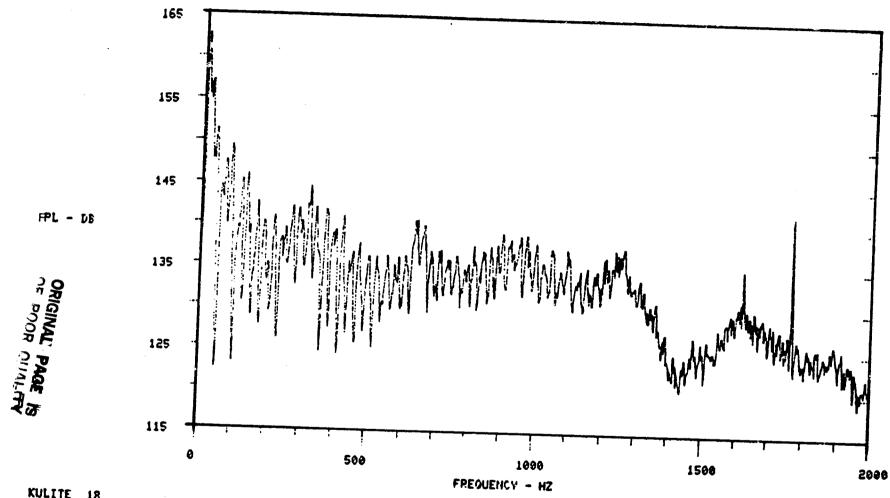
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PUN HO 5 x THRUST-36.55 1.7 0.00103

108

CF6-50 CORE NOISE PROGRAM.

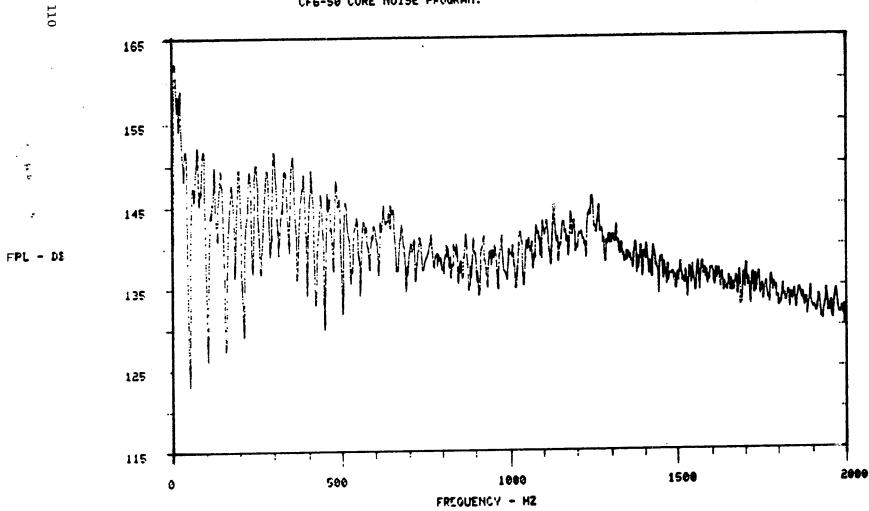
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KULITE 18 RPG NO 561 FAN SPEED 2770 RPM OAFPL 170.5 DB

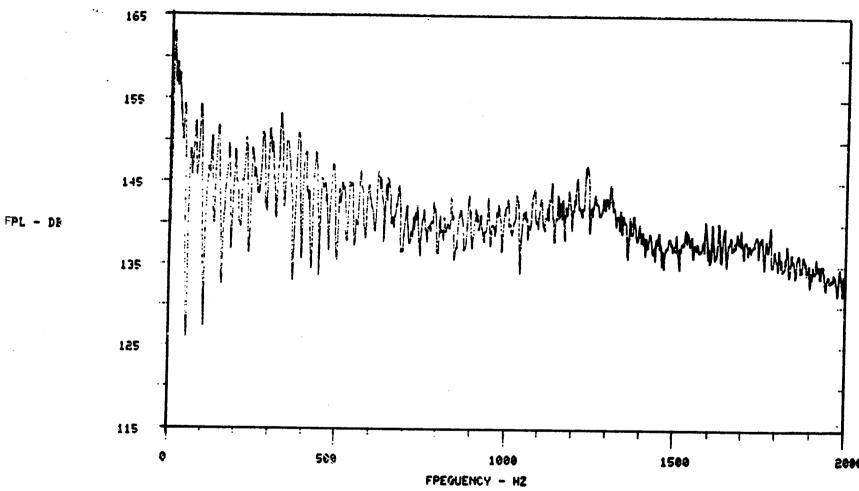
RUH HO 7 % THRUST-45.57 G/S 1./ 5.88888 BS/SR 4898/ 8192

CF6-50 CORE NOISE PROGRAM.



KULITE 19 RDG NO 561 FAN SPEED 2778 RP* OAFPL 173.7 DB

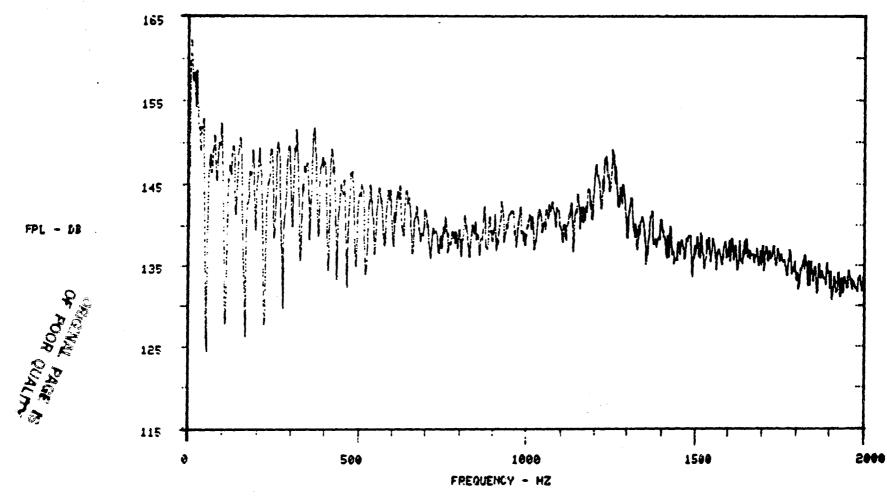
RUN HO % THRUST-45.57



KULITE 20 RDG NO 561 FAN SPEED 2770 RPM OAFPL 174.5 DB

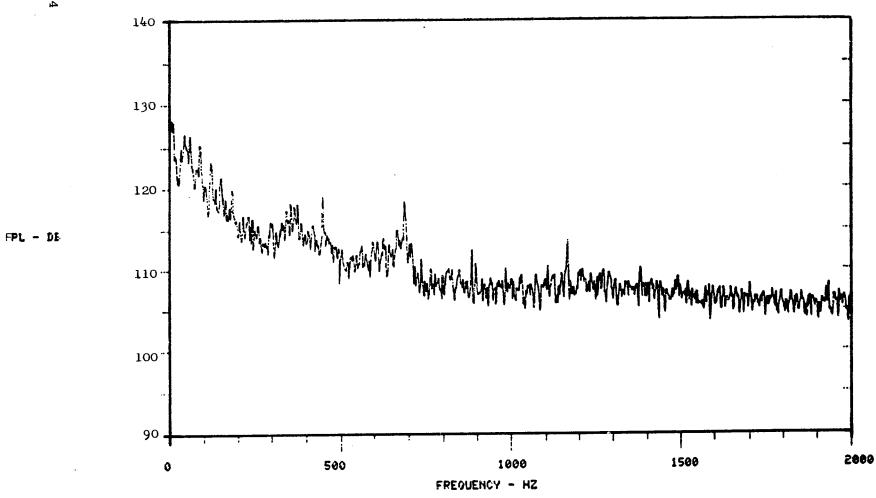
111

RUN NO 7 % THRUST-45.57 Q/S 1./ 2.00000 BS/SR 4096/ 8192



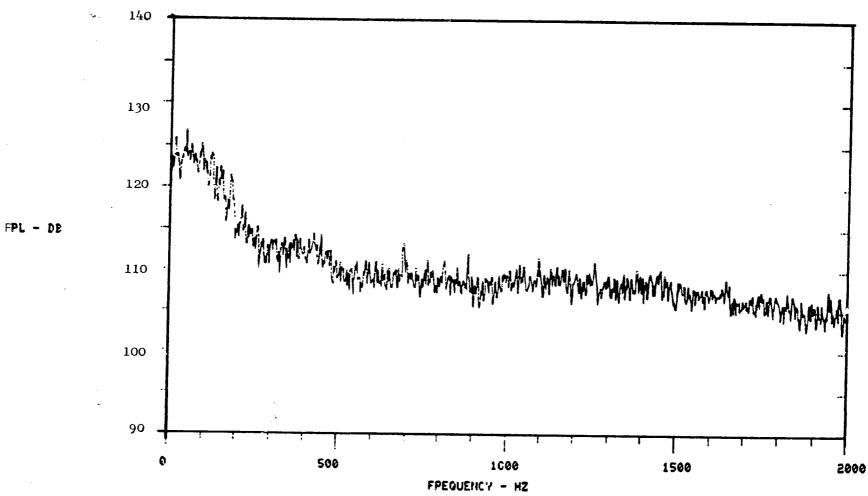
KULITE 21 RDG NO 561 FAN SPEED 2770 RPM OAFPL 174.2 DB

RUN NO 7 % THRUST-45.57 Q/S 1./ 2.00000 B5/SR 4096/ 8192 CF6-50 CORE NOISE PROGRAM.



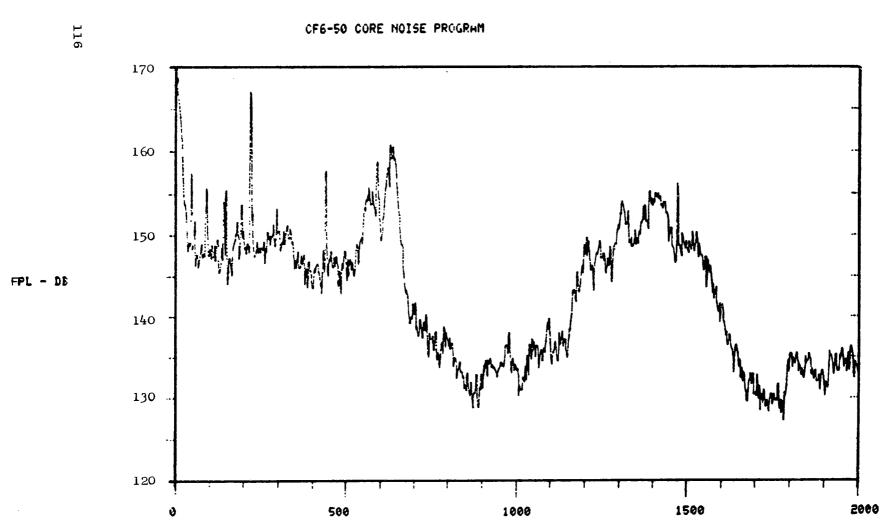
KULITE 24 RDG NO 561 FAN SPEED 2770 RPM CAFPL 144.3 DB

RUN NO 7 % THRUST-45.57 G/S 1./ 5.00000 BS/SR 4096/ 8192 CF6-50 CORE NOISE PROGRAM



KULITE 26 **RDG NO 561** FAN SPEED 2770 RPM 0AFPL 144.0 DB

PUN NO * THRUST-45.57 1./ 2.00000 \$5/5R 4096/ 8192



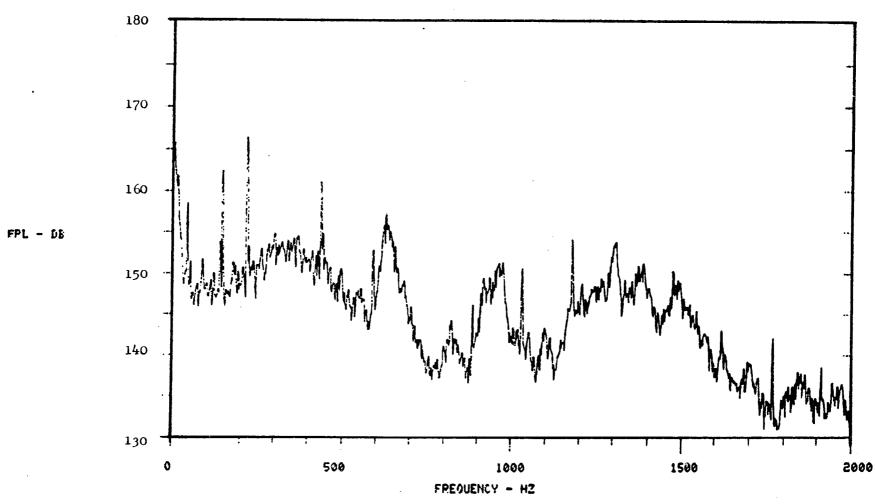
FREQUENCY - HZ

KULITE 23 RDG NO 561 FAN SPEED 2770 RPM 180.7 DB CAFPL

PUN NO * THRUST-45.57 85/SR 4096/ 8192

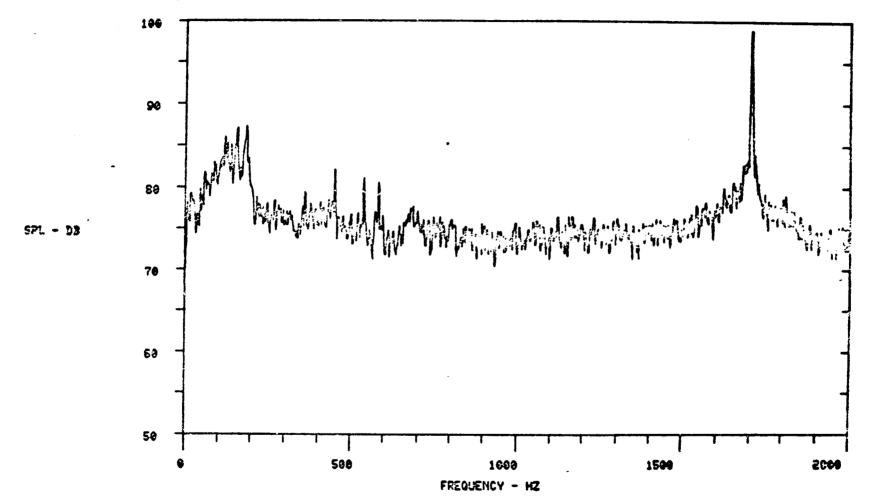
CF6-50 CORE NOISE PROGRAM

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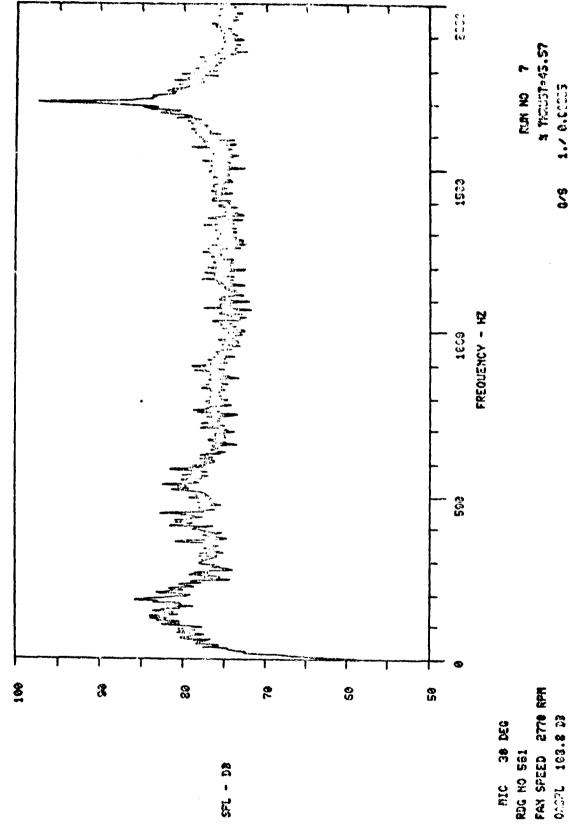
KULITE 25 RDG NO 561 FAN SPEED 2770 RPM OAFPL 179.7 117

RUN NO * THRUST-45.57 1./ 0.50000 BS/SR 4096/ 8192



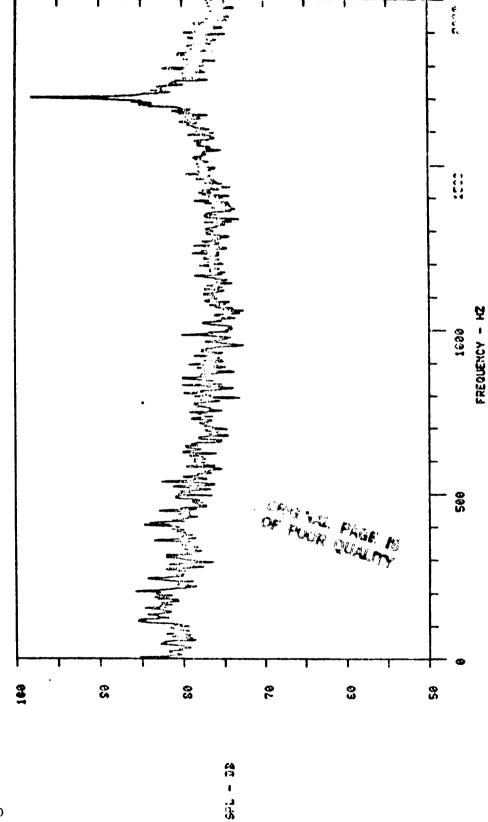
HIC 10 DEG RDG NO 561 FAN SPEED 2770 RPH CASPL 108.8 DB

RUN NO * THRUST-45.57 1./ 0.00225 BS/SR 4898/ 8153



NUM NO 7 % TRAUST-45.57 1.7 @.0003

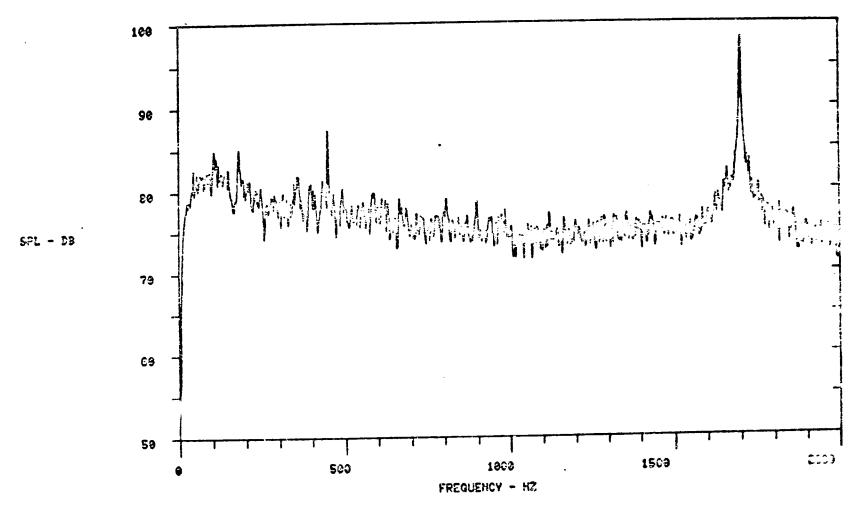
85/5R 4023/ 8152



RUN NO 7 83/58 4856/ £153

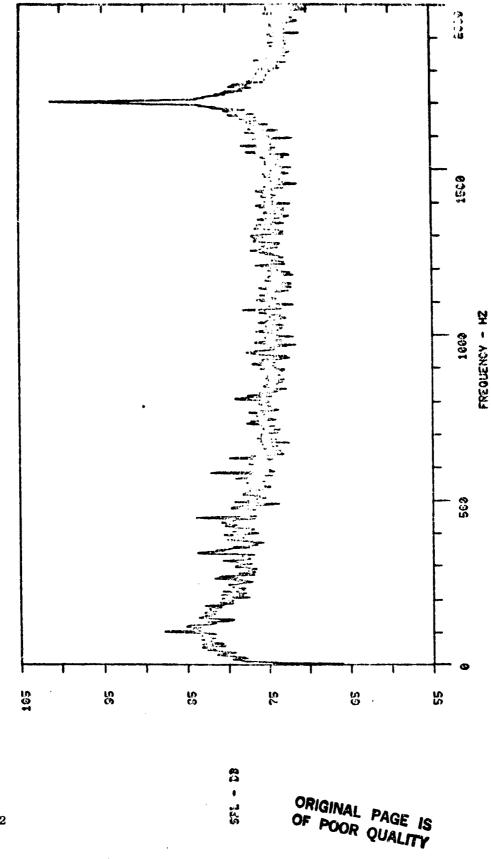
RIG NO 581 FAN SPEED 2779 RPM CASPL 189.7 DB

MIC 40 DEG



#IC 59 DEG #UG NO 751 FAN SPEED 2779 RPM OACAL 103.9 DB 12

RUN NO 7 % THRUST-45.57 Q/S 1./ 0.00203 BS/6R 4006/ 8193

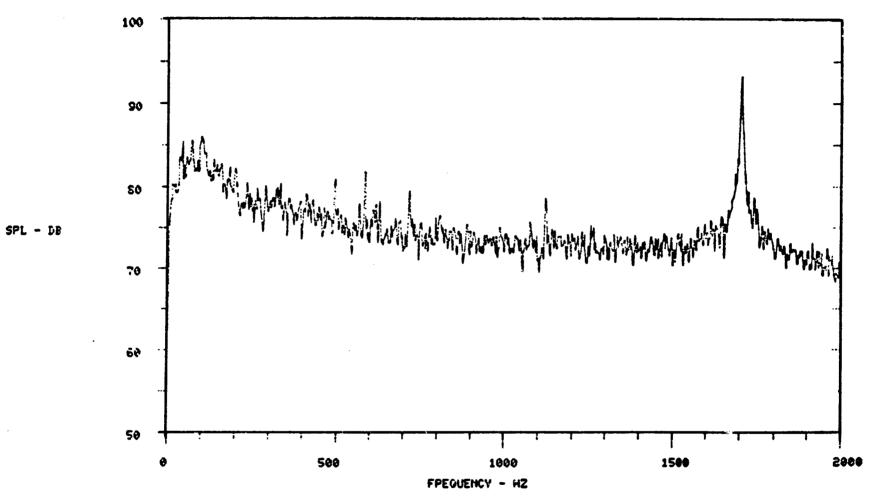


RUN NO 7 * TROUST-45.57 1.7 0.9335

RDG NO 561 Fra spzed 2773 RPM Okepl 169.5 DB

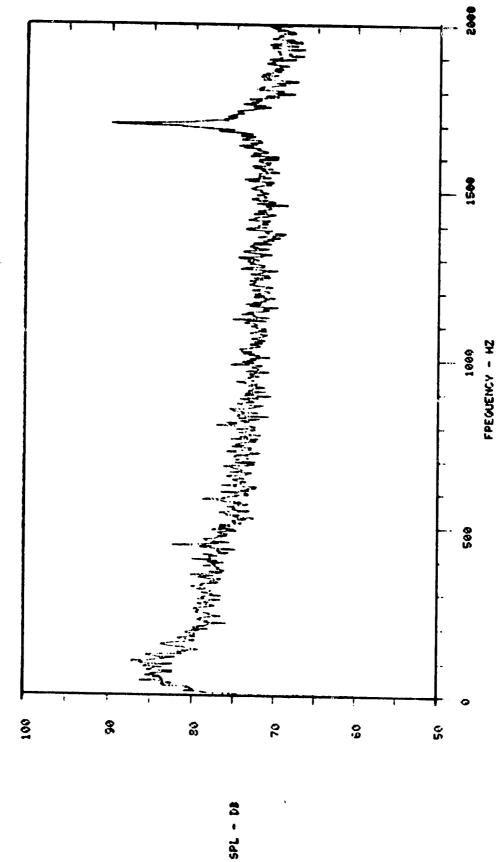
930 69

CF6-50 CORE NOISE PROGRAM



MIC 70 DEG RDG NO 561 FAN SPEED 2770 RPM OASPL 107.1 DB

RUN NO 7 % THRUST-45.57 G/S 1./ 0.00325 35/SR 4096/ 8192

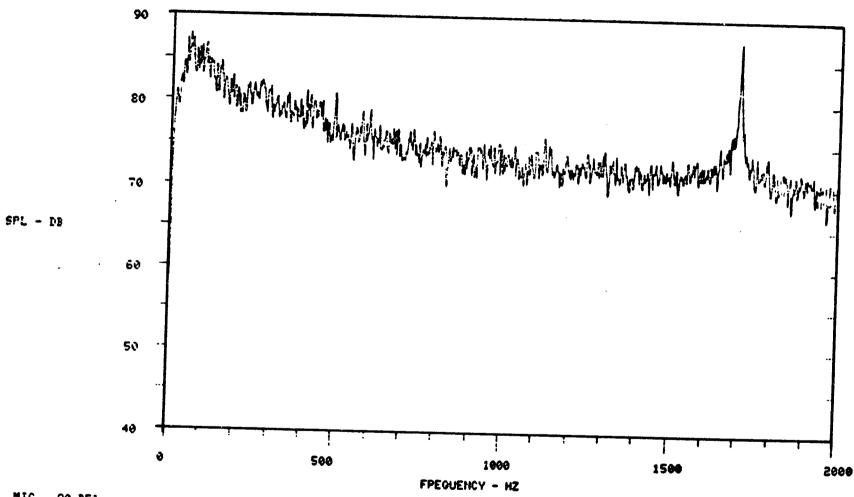


* THRUST-45.57 1.7 0.00103 RUN HO 35/SR 4096/ 8192

RDG NO 561 FAN SPEED 2770 RPM OASPL 106.7 DB

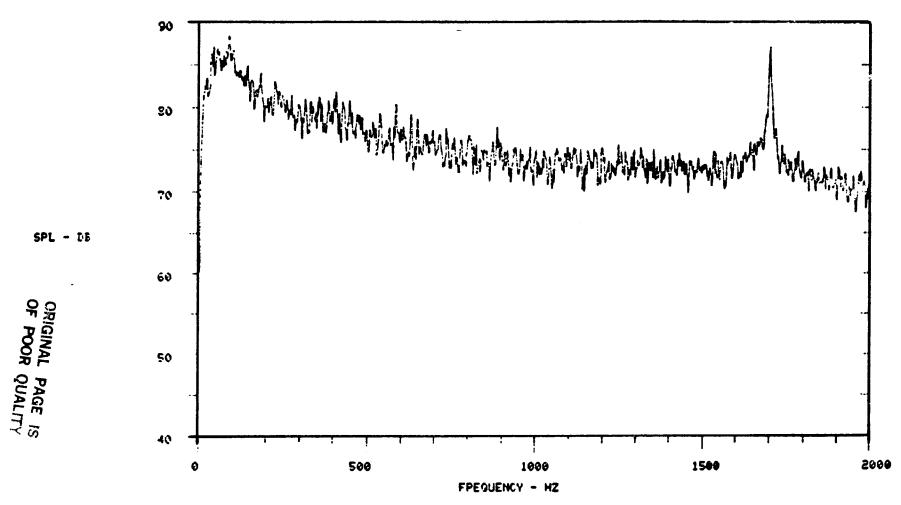
MIC 89 DEG

CF6-50 CORE NOISE PROGRAM



MIC 90 DEG RDG NO 561 FAN SPEED 2770 RPM 0ASPL 107.2 DB 125

RUN NO 7 * THRUST-45.57 1./ 0.00103 BS/SR 4096/ 8192



MIC 100 DEG

RDG NO 561

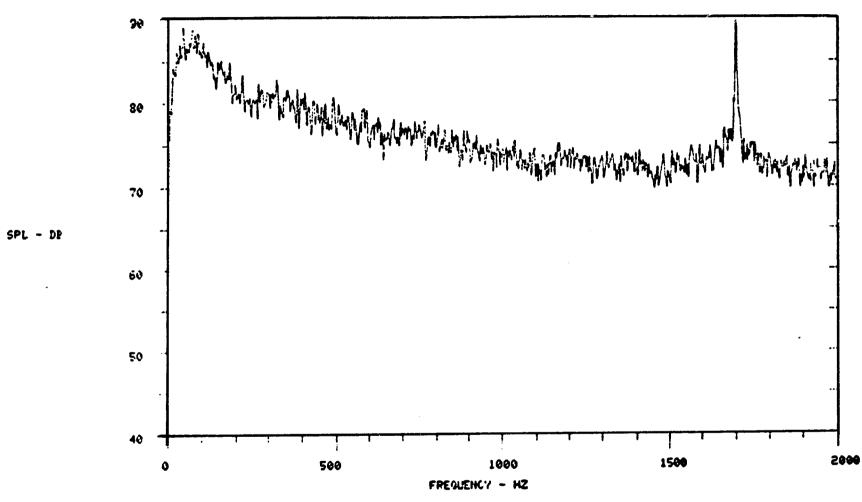
FAN SPEED 2770 RPM

OASPL 107.7 DB

RECORD 1.6 SEC

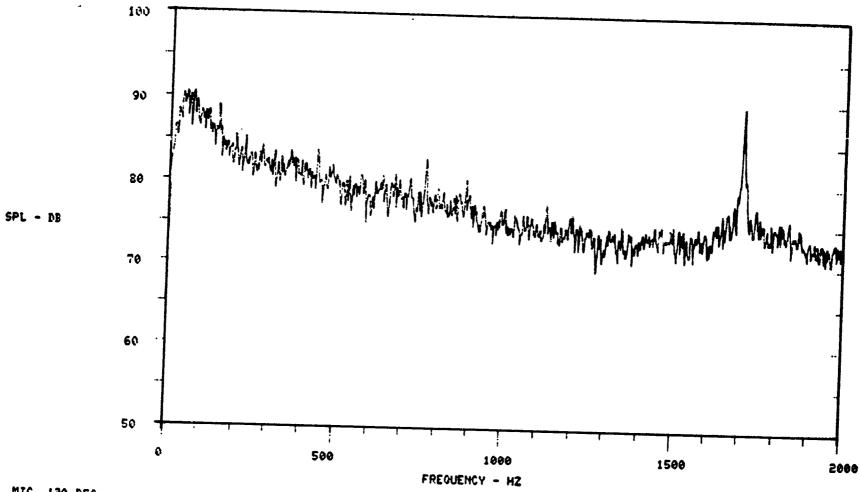
PAUSE -- PUSH RETURN TO CONTINUE

RUN NO 7 % THRUST=45.57 G/S 1./ 0.00103 BS/SR 4096/ 8192



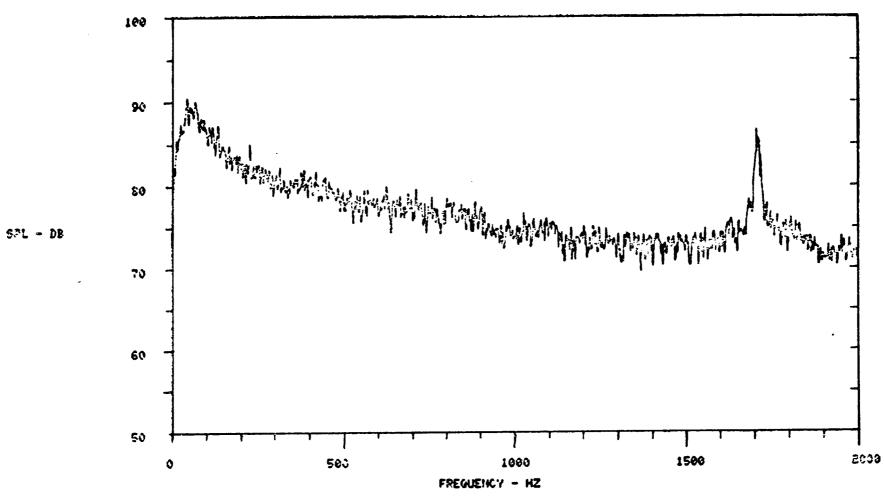
MIC 110 DEG RDG NO 561 FAN SPEED 2770 RPM OASPL 108.5 DB

RUN NO 7 - % THRUST-45.57 G/S 1./ 9.00103 BS/SR 4096/ 8192



MIC 120 DEG RDG NO 561 FAN SPEED 2770 RPM OASPL 110.1 DB

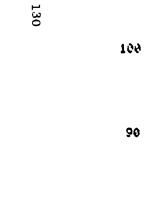
PUN NO 7 * THRUST-45.57 Q/S 1./ 0.00103 BS/SR 4096/ 8192 CF6-50 CORE NOISE PROGRAM.



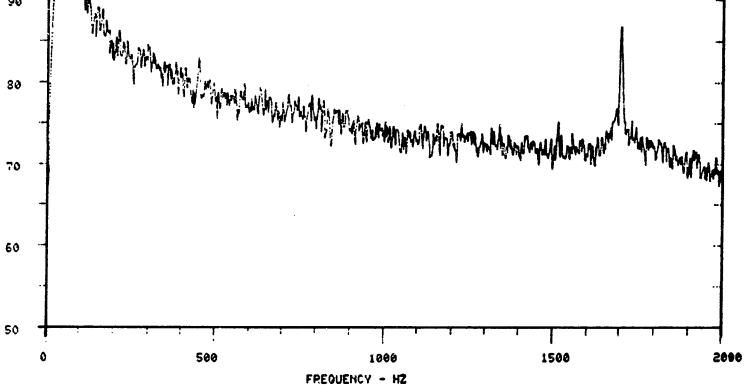
MIC 130 DEG RDG NO 561 FAN SPEED 2770 RPM 0857L 109.4 DB 129

RUN NO 7 x" THRUST-45.57 1./ 0.86103 BS/SR 4096/ 8192

CF6-50 CORE NOISE PROGRAM.

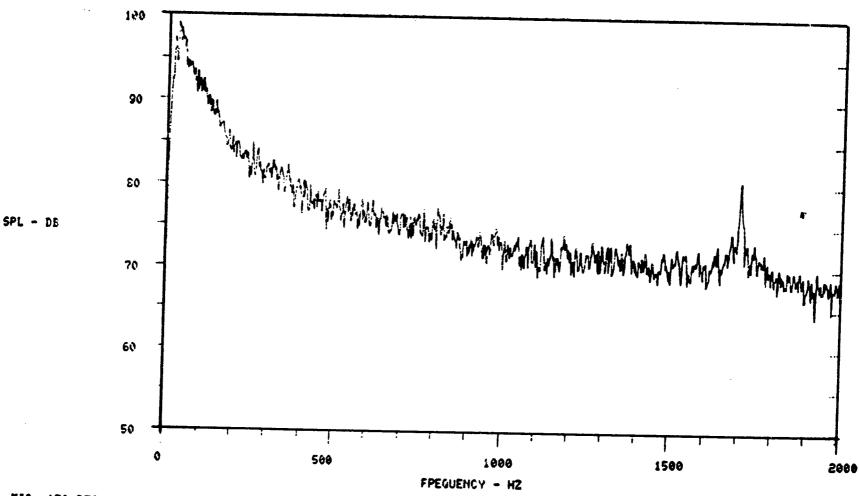






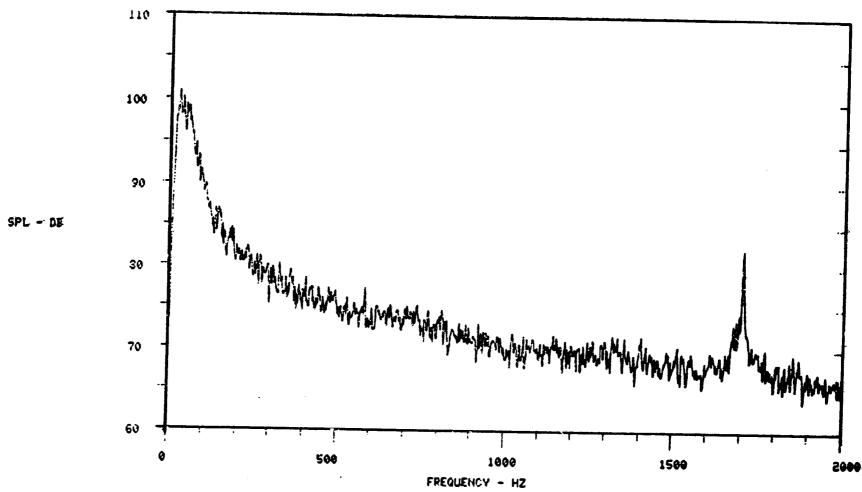
MIC 140 DEG RDG NO 561 FAN SPEED 2770 RPM OASPL 111.9 DB

RUN NO 7 % THRUST-45.57 Q/S 1./ 0.00103 BS/SR 4096/ 8192



MIC 150 DEG RDG NO 561 FAN SPEED 2778 RPM OASPL 113.1 DB

PUN NO * THRUST-45.57 1.7 0.00325 35/5R 4096/ 8192

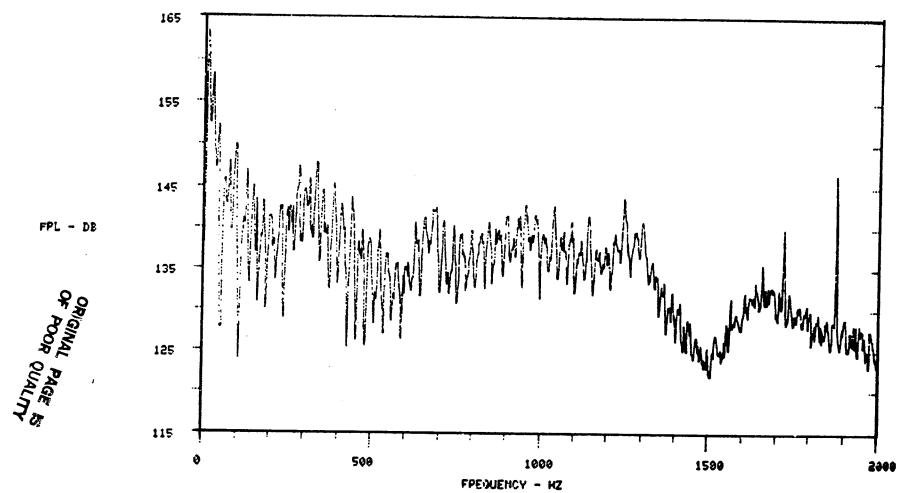


MIC 160 DEG RDG NO 561 FAN SPEED 2770 RPM OASPL 114.0 DB

RUN NO 7 % THRUST-45.57 ** G/S 1./ 0.00325 BS/SR 4096/ 8192

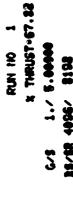
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KULITE 18
RDG NO 563
FAN SPEED 3223 RPH
OAFPL 171.5 DB

RUN NO 1 % THRUST-67.82 G/S 1./ 5.00880 BS/SR 4096/ 8198



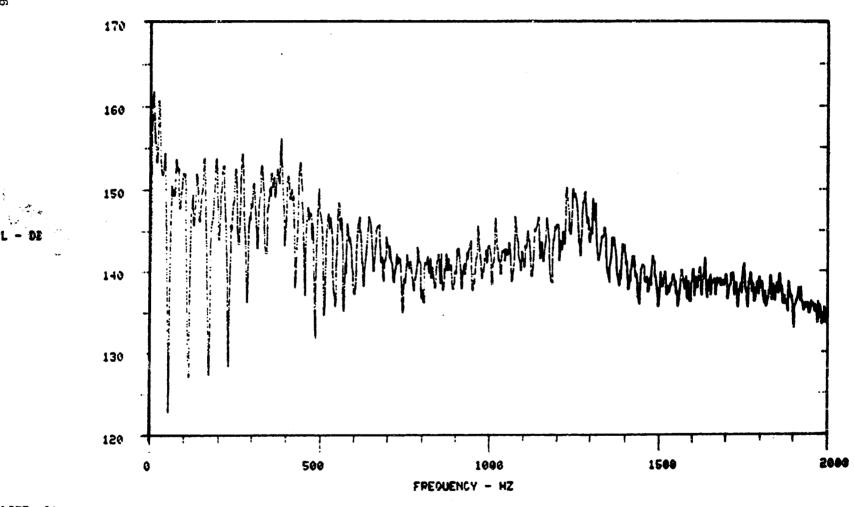
KULITE 19 RDG NO 563 FAN SPEED 3223 RPM OAFPL 175-4 DB

CF6-50 CORE NOISE PROSRAM.

RUN NO 1 X THRUST-67.88

RDG NO 563 FAN SPEED 3223 RPM

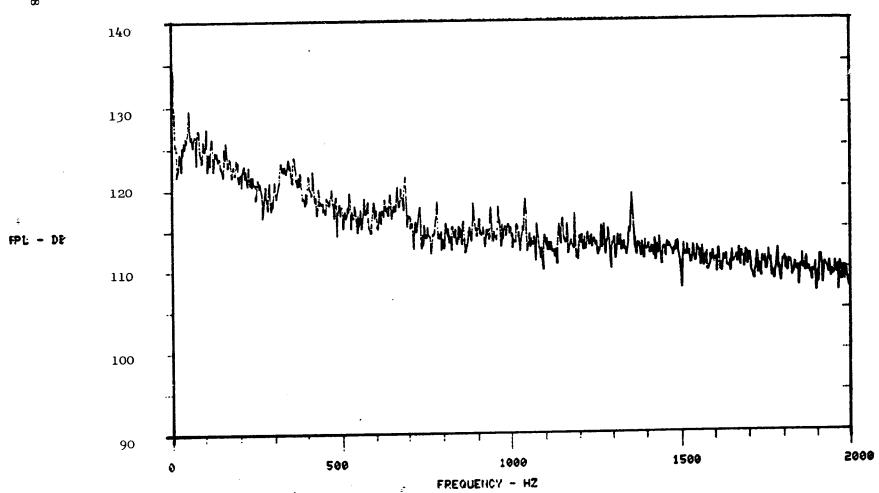
OAFPL 176.8 DB



KULITE 21 RDG NO 563 FAH SPEED 3223 RPM OAFPL 176.1 DB

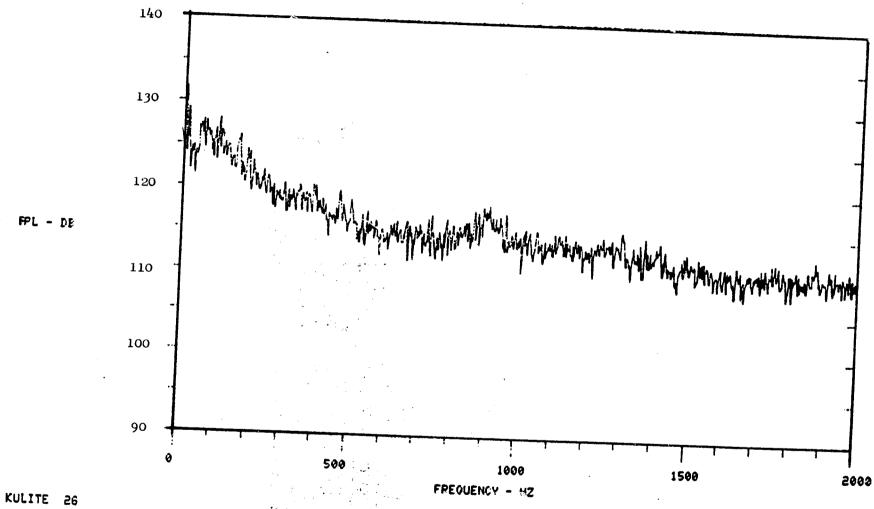
RUN NO 1 % THRUST-67.88" G/S 1./ 5.00000 BS/SR 4006/ 8198

CF6-50 CORE NOISE PROGRAM.



KULITE 24 RDG NO 563 FAN SPEED 3223 RPM OAFPL 148.5 DB

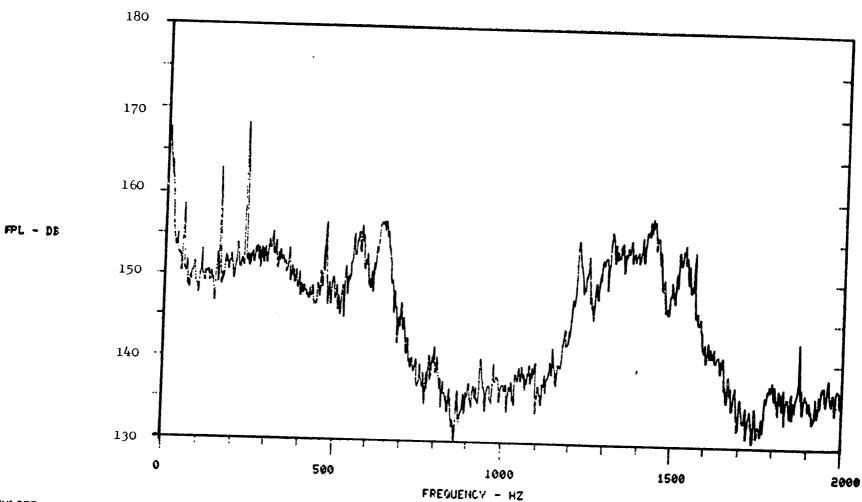
RUN NO * THRUST-67.82



RDG NO 563 FAH SPEED 3223 RPM OAFPL 147.8 DB

RUN NO * THRUST-67.82

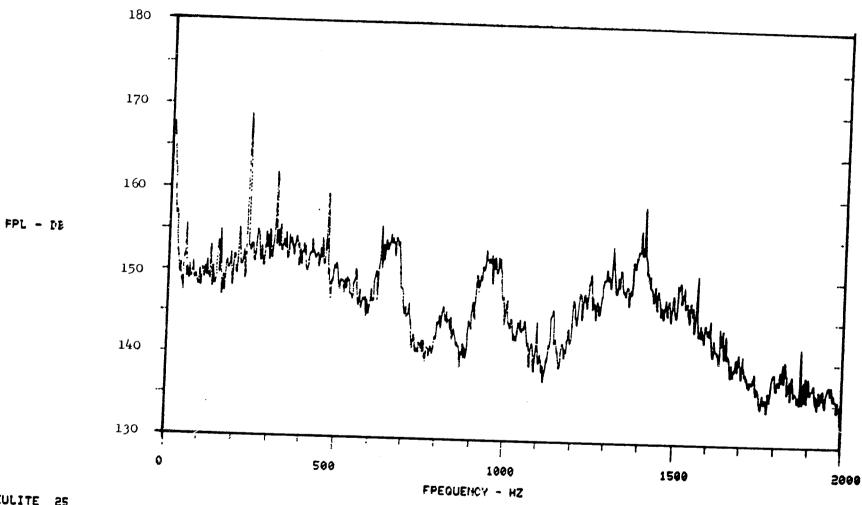
CF6-50 CORE NOISE PROGPAM



KULITE 23 RDG NO 563 FAN SPEED 3223 RPM OAFPL 181.3 DB

RUN NO 1 % THRUST-67.82 ** G/S 1./ 1.03900 BS/SR 4096/ 8192

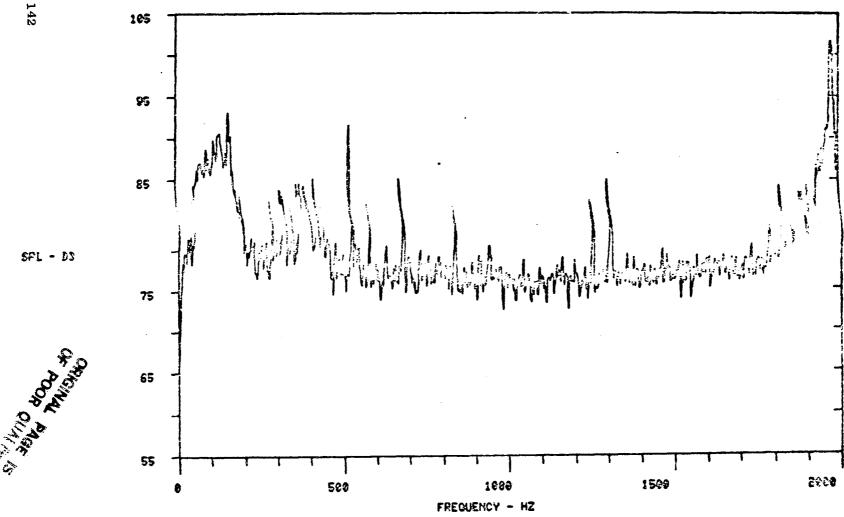
CF6-50 CORE NOISE PROGPAM



KULITE 25 RDG NO 563 FAN SPEED 3223 RPM OAFPL 181.1 DB

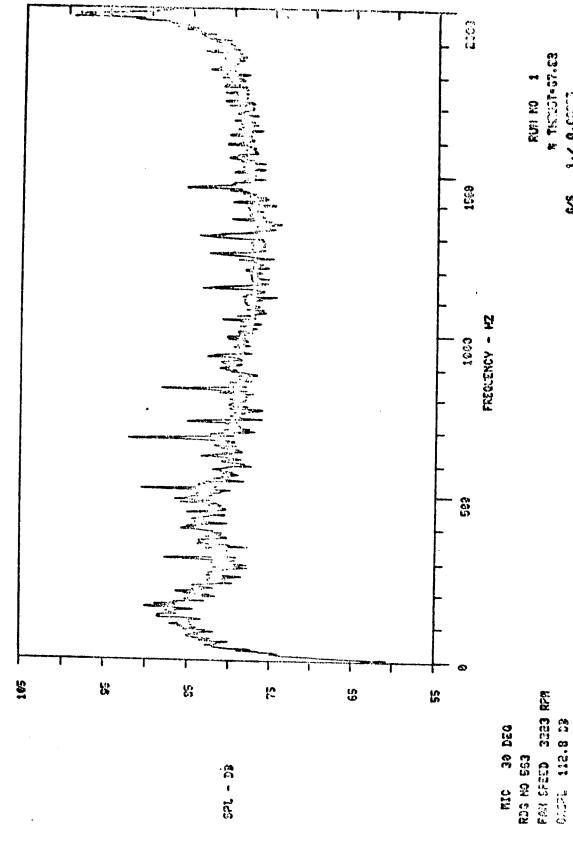
RUN NO * THRUST-67.82

CF6-59 CORE NOISE PROGRAM.

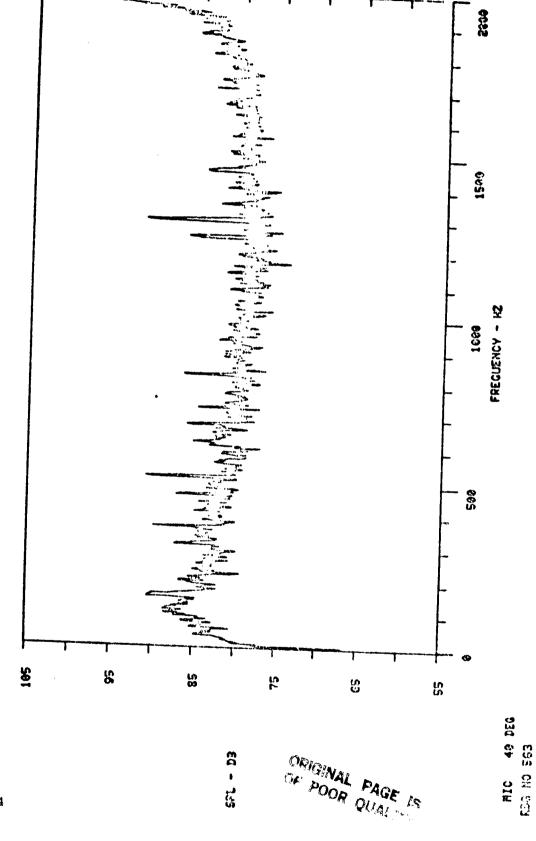


MIC 16 DEG REG NO 563 FAN SPEED 3223 RPM 040FL 113.1 DB

\$8/3R 4906/ 8198

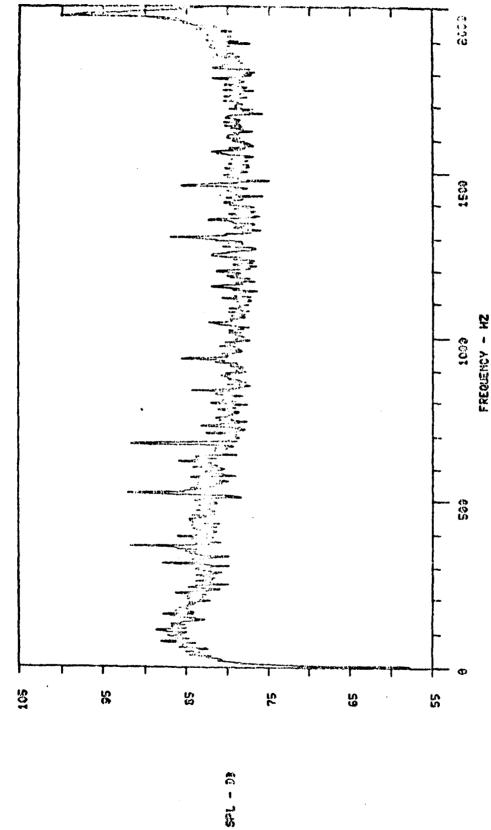


TROUGH # 0.5 GP. 67. 63 6/5 1.7 0.5 GCGG 89/57 4533/ 8153



RUN KO 1 X THRUST-67.83 Q/S 1./ 0.65225 B9/S7 4653/ 8152

FAN SPEED 3223 RPM OASPL 114.3 DS



THRUST-87.83 18/5R 4688/ 2152

RIC 50 DEG RDG NO 563 FAN SPZED 3223 RPM CACPL 112.0 DB

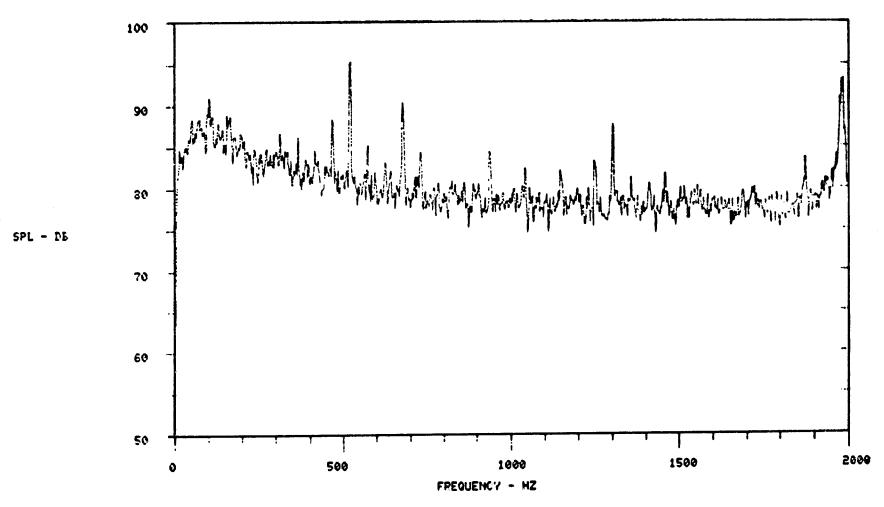
KUN NO 1 K THRUST-67.62 1./ 0.00325

RDA NO 563 FAN SPEED 3223 RPM

69 DEG

01 8: 045PL 112.6 DB

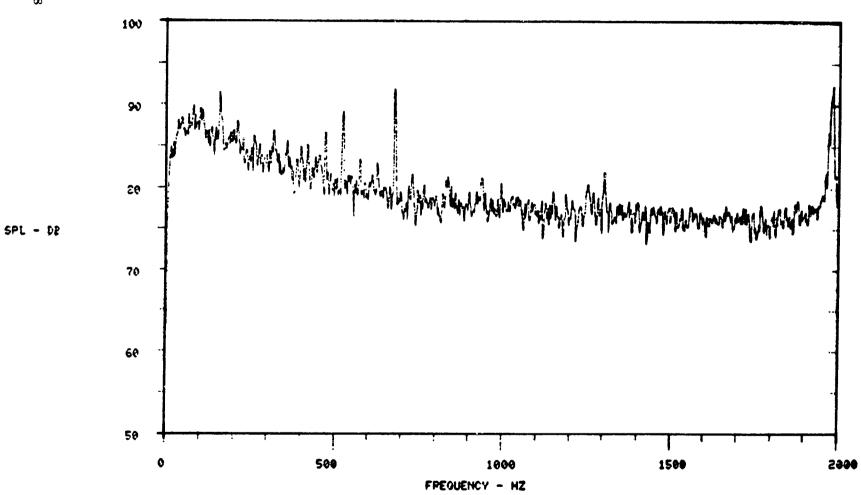
85/57 4655/ 8153



MIC 70 DEG RDG NO 563 FAN SPEED 3223 RPN QASPL 111.9 DB

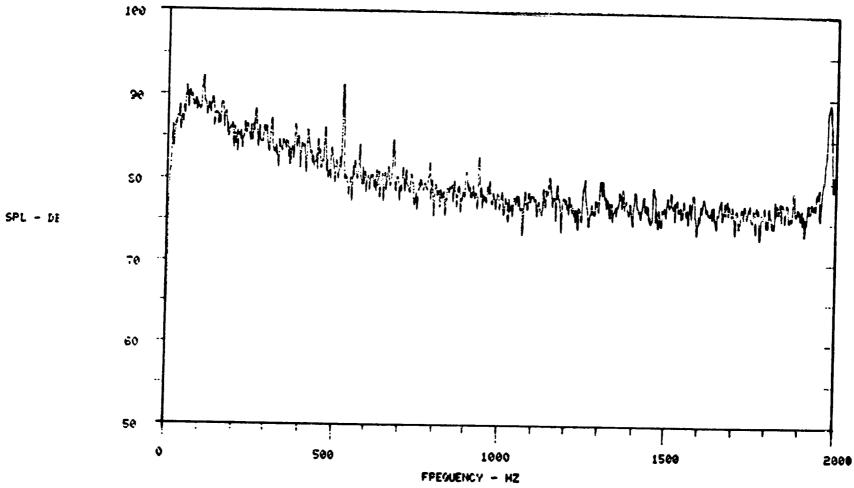
RUN NO 1 % THRUST-67.82 G/S 1./ 0.00325 BS/SR 4096/ 8192

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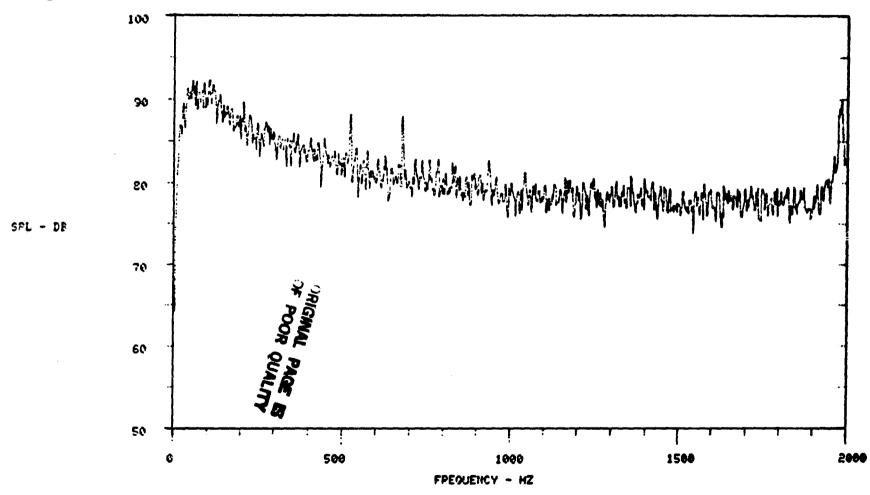
MIC S0 DEG RDG NO 563 FAN SPEED 3223 RPM OASPL 111.4 DB

PUN NO 1 % THRUST-67.82 G/S 1./ 0.00325 BS/SR 4096/ 8192



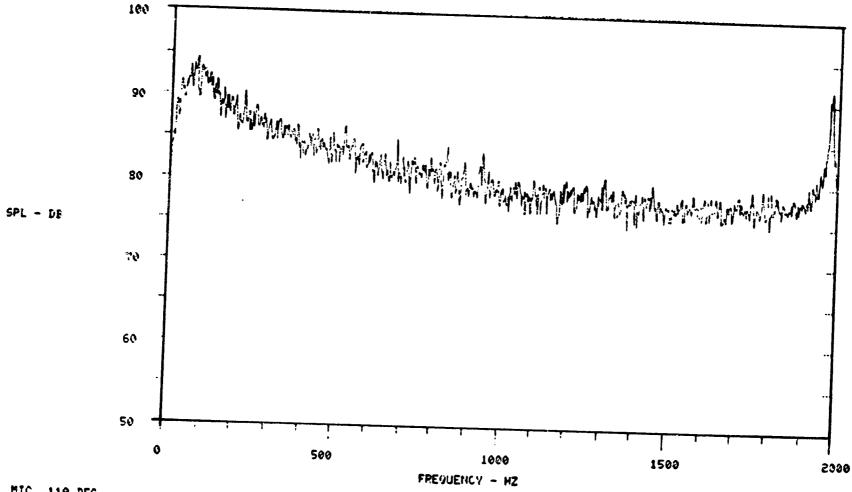
MIC 90 DEG RDG NO 563 FAN SPEED 3223 RPM CASPL 111.9 DB

RUN NO 1 * THRUST-67.82 1./ 0.00325



MIC 100 DEG RDG NO 563 FAN SPEED 3223 RPM OASPL 112.9 DB

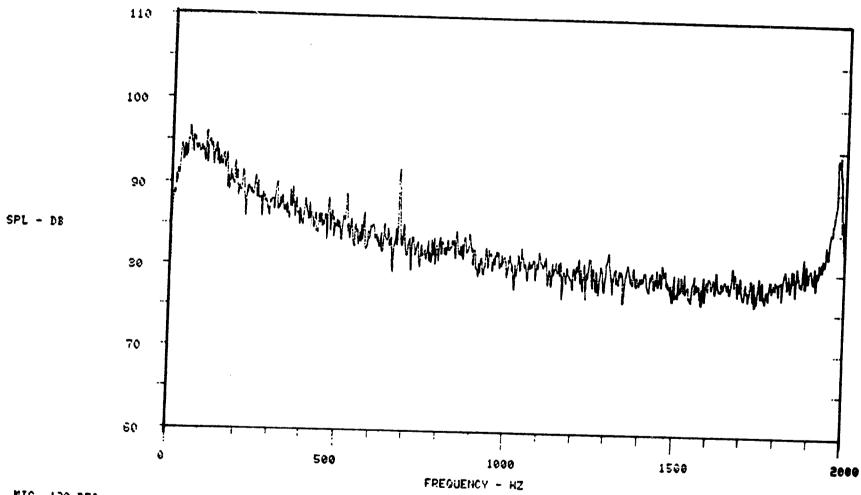
RUN NO 1 * THRUST-67.82 G/S 1./ 0.00325 BS/SR 4096/ 8192



MIC 110 DEG RDG NO 563 FAN SPEED 3223 RPM OASPL 113.5 DB

151

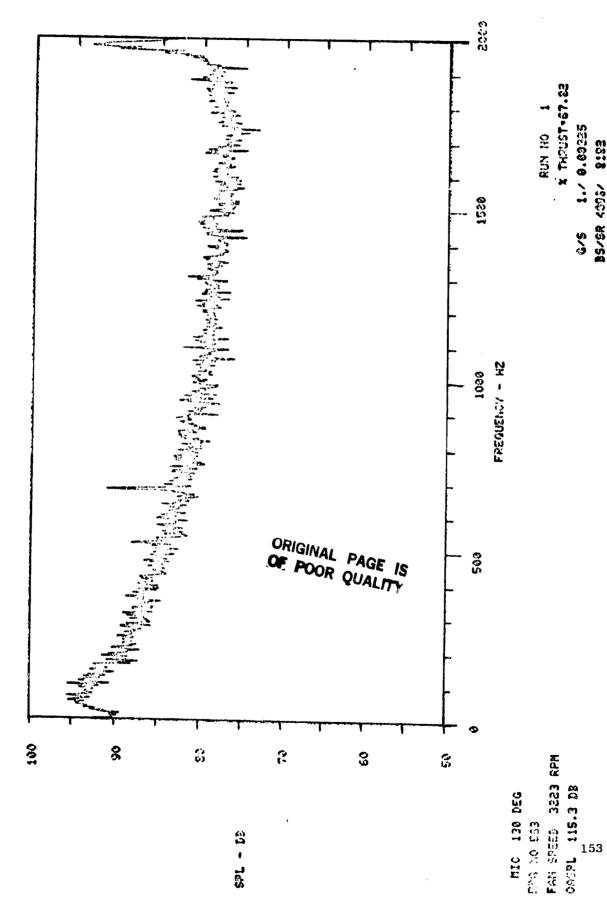
RUN NO 1 % THRUST-67.82 G/S 1./ 0.00325 BS/SR 4096/ 8192



MIC 120 DEG RDG NO 563 FAN SPEED 3223 RPM OASPL 116.1 DB

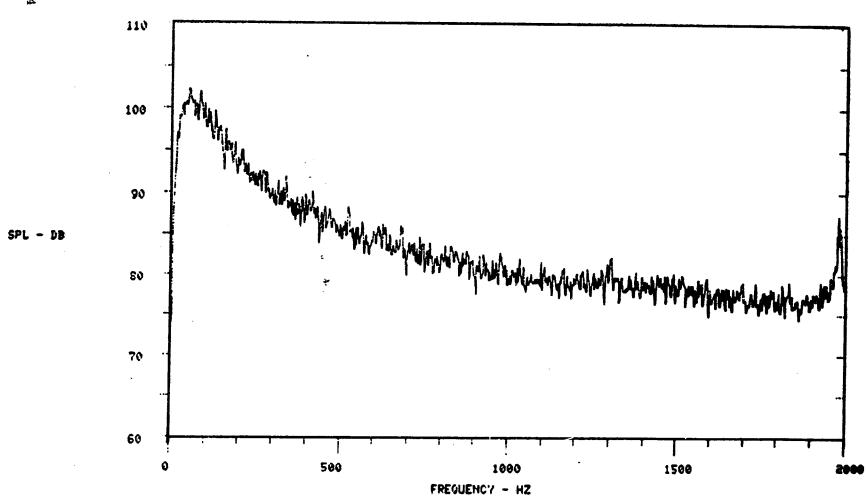
RUN NO 1 * THRUST-67.82 G/S 1./ 0.00325 BS/SR 4696/ 8192

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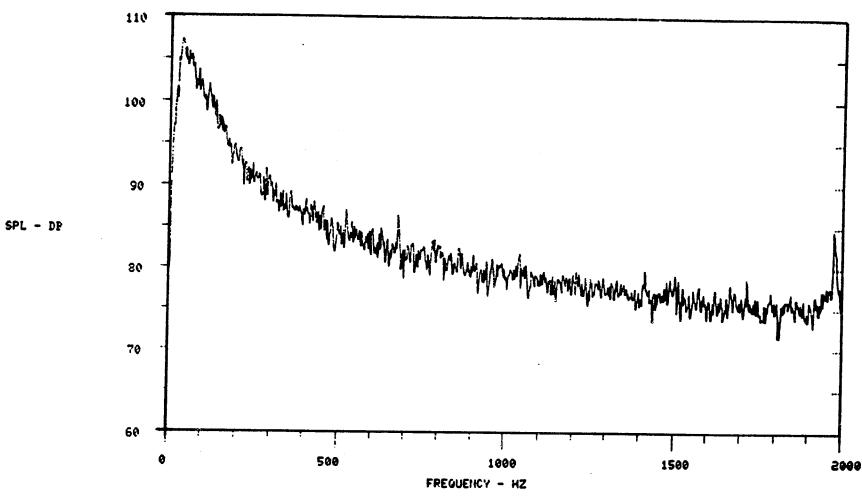
RUN 180 1 x THRUST-67.83 1.7 0.69325

35/5R 4395/ 8193



MIC 140 DEG RDG NO 563 FAN SPEED 3223 RPM OASPL 119.5 DB

RUN NO 1 % THRUST-67.82 ~ G/S 1./ 0.00385 RS/GR 4096/ R198 CF6-50 CORE NOISE PROGRAM.

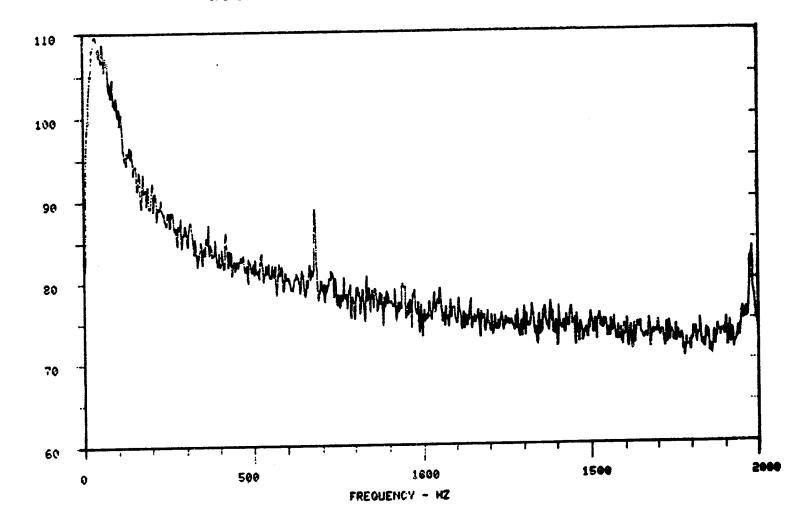


MIC 150 DEG **RDG NO 563** FAN SPEED 3223 RPM 0ASPL 122.1 DB

RUN NO * THRUST-67.82

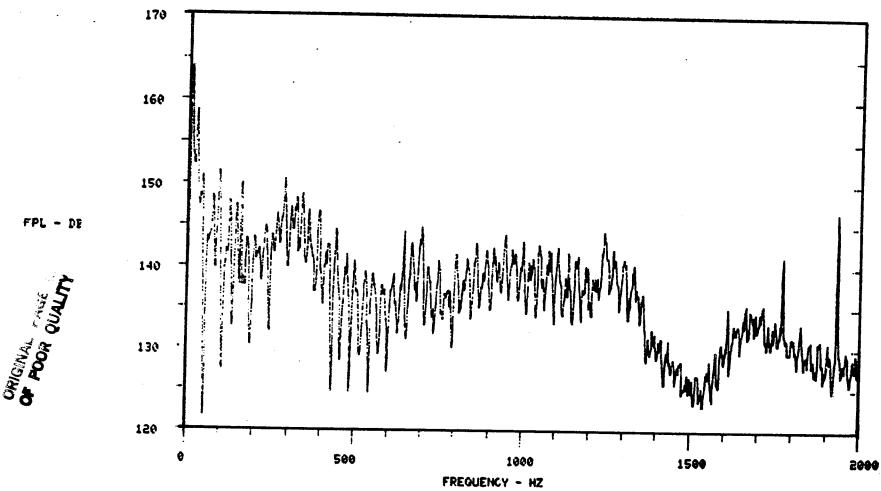
CF6-50 CORE HOISE PROGRAM.

156



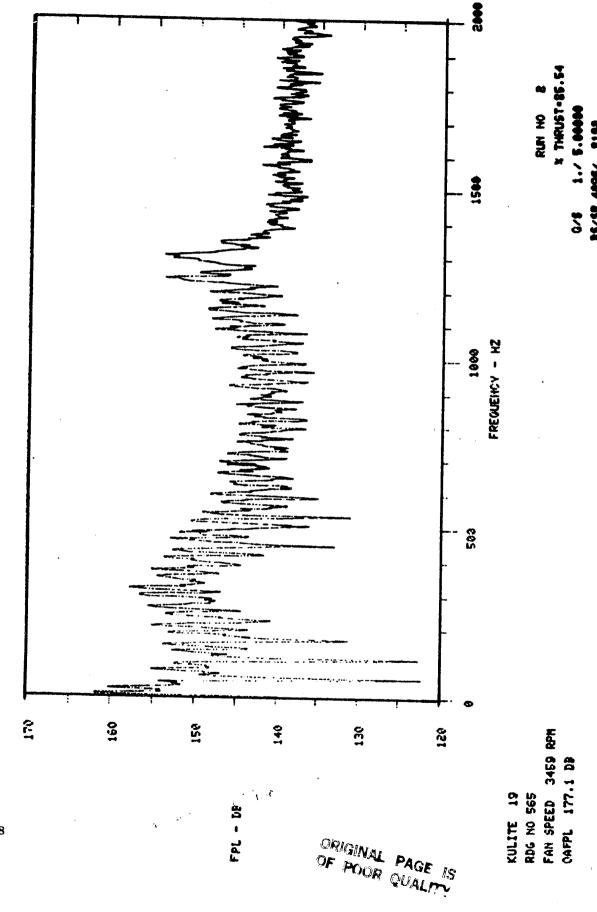
MIC 160 DEG RDG NO 563 FAN SPEED 3823 RPM OASPL 183.4 DB

RUN NO 1 % THRUST-67.82 Q/8 1./ 9.00385 Re/82 4496/ 8192



KULITE 18
RDG NO 565
FAN SPEED 3459 RPM
OAFPL 178.2 DB

Run no 8 % Thrust-85.54° G/S \$./ 5.00000 BS/SR 4996/ 8198



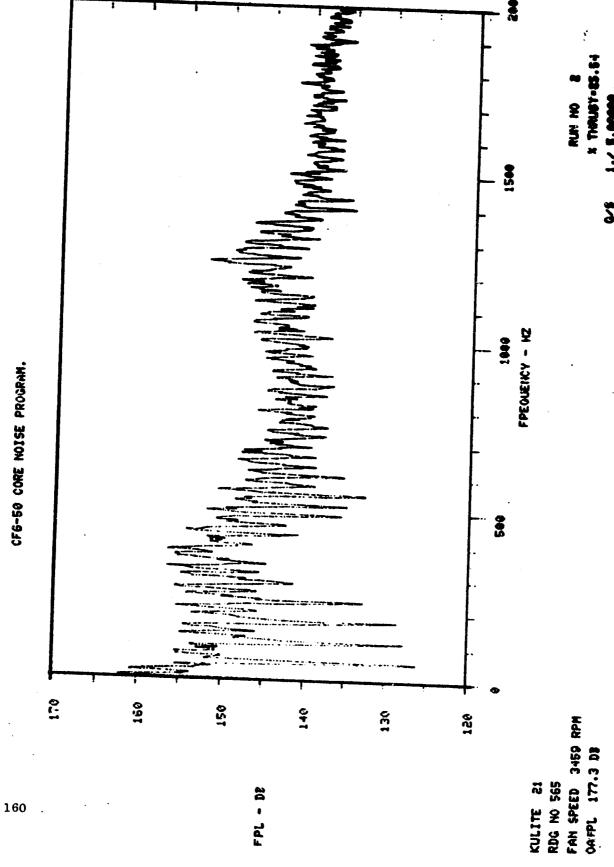
158

CF6-50 CORE NOISE PROGRAM.

CF6-50 CORE NOISE PRUGRAM.

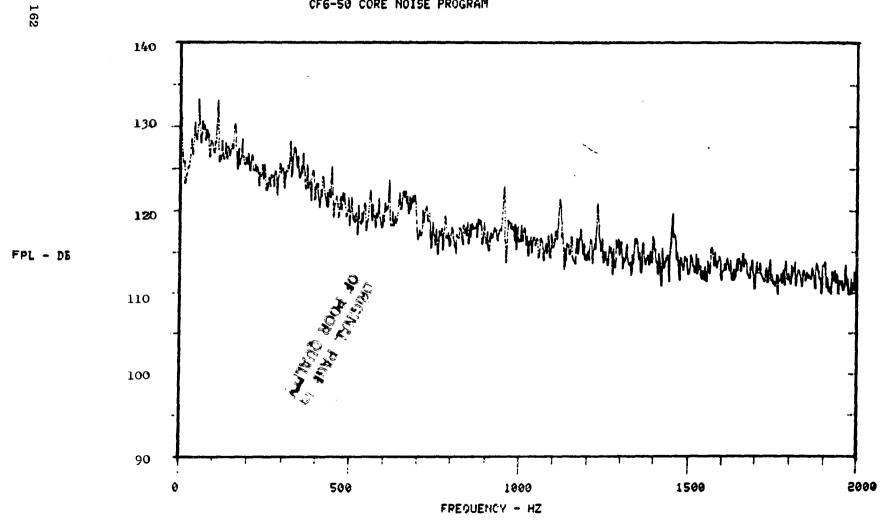
159

RDG NO 565 FAN SPEED 3459 RPM OAFPL 178.5 DB KULITE 20



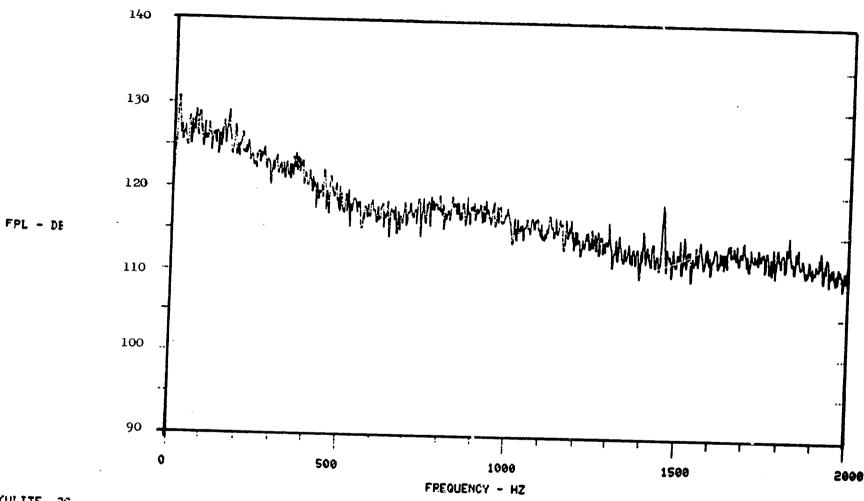
CF6-50 CORE NOISE PROGRAH.

CF6-50 CORE NOISE PROGRAM



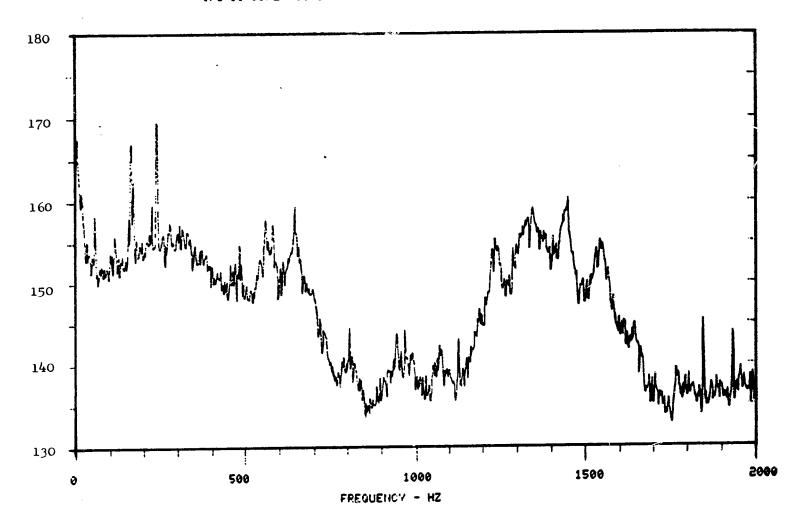
KULITE 24 RDG NO 565 FAN SPEED 3459 RPM OAFPL 151.3 DB

CF6-50 CORE HOISE PROGRAM



KULITE 26 RDG NO 565 FAN SPEED 3459 RPM 0AFPL 149.9 DB 163

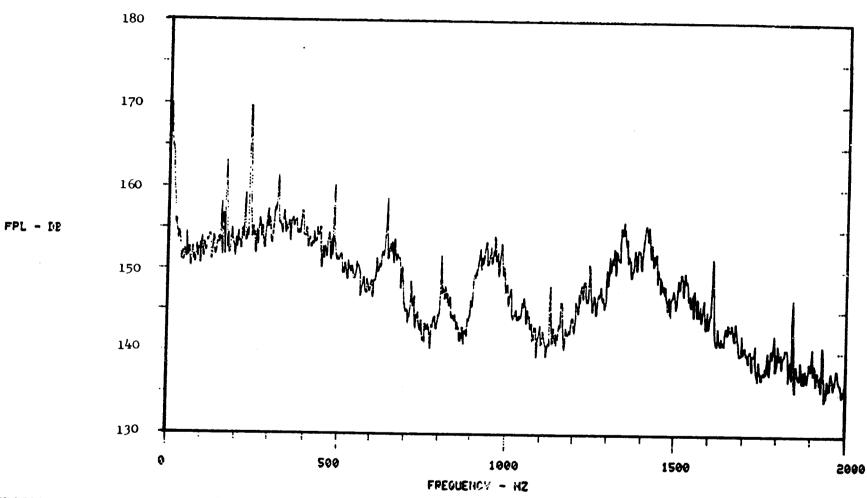
FPL - DB



KULITE 23 RDG NO 565 FAN SPEED 3459 RPM CAFPL 182.4 DB

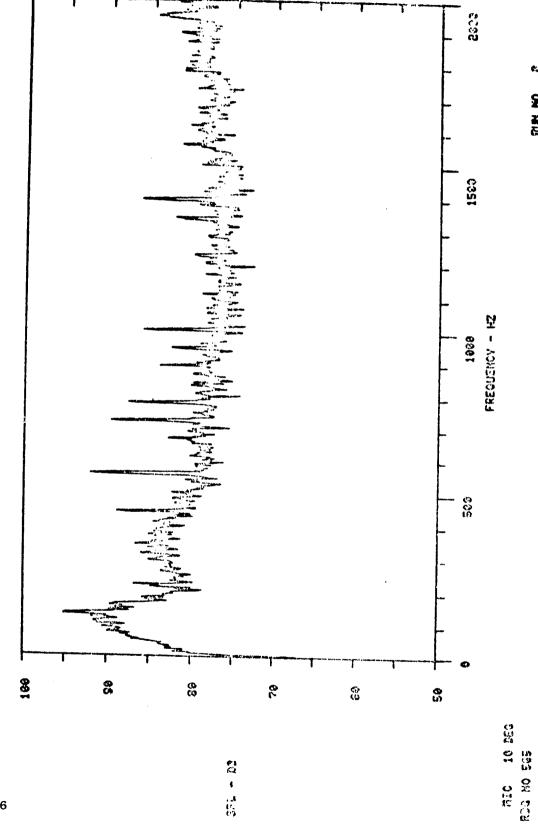
RUH NO 2 * THRUST-85.54 G/S 1./ 1.00600 BS/SR 4096/ 8192

CF6-50 CORE NOISE PROGRAM



KULITE 25 RDG NO 565 FAN SPEED 3459 RPM OAFPL 182.4 DB

* THRUST-85.54



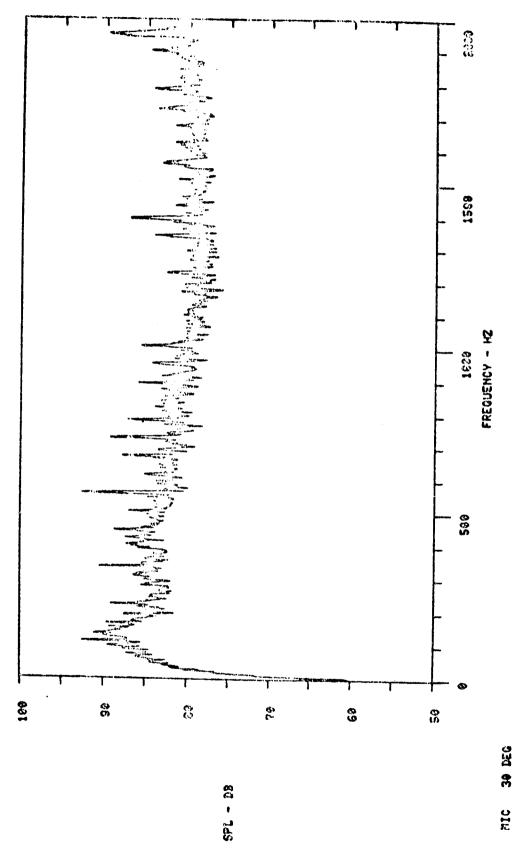
THRUST-83.54 6/5 1./ 8.0000

0/5 1.7 8.0000 0/5/3 4008/ 8152

PAN SPEED 3459 RPM

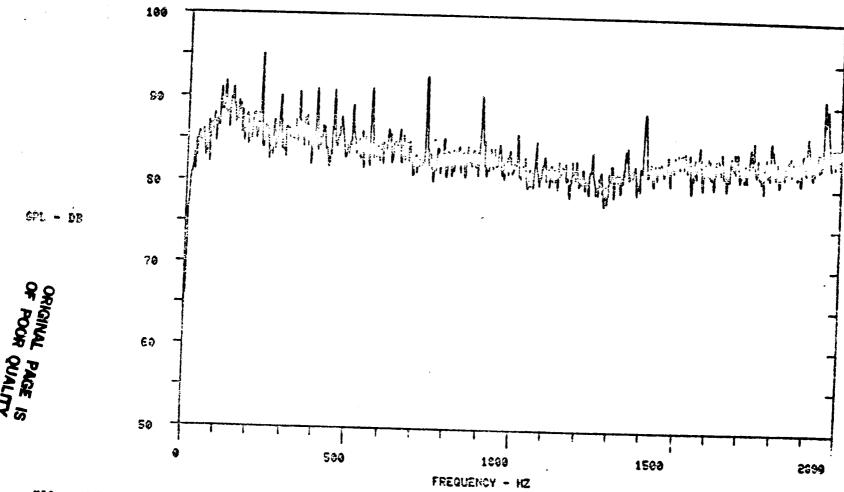
01.57L 111.9 28

CFG-50 CORE NOISE PROGRAM.



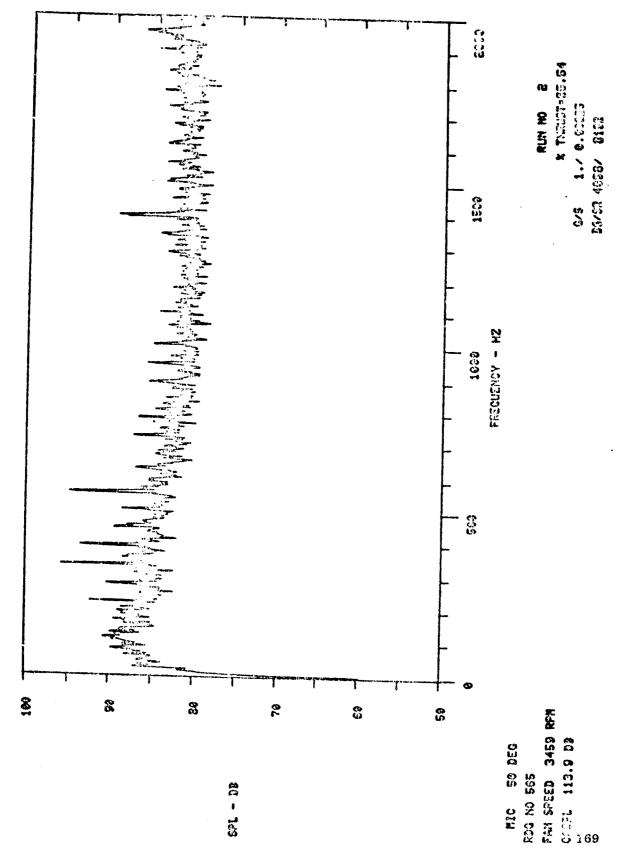
FGN 5955 3459 RPR CCCC 112.8 b3

REN NO 8 6/5 1.7 0.60303 BR/SR 4696/ 8152

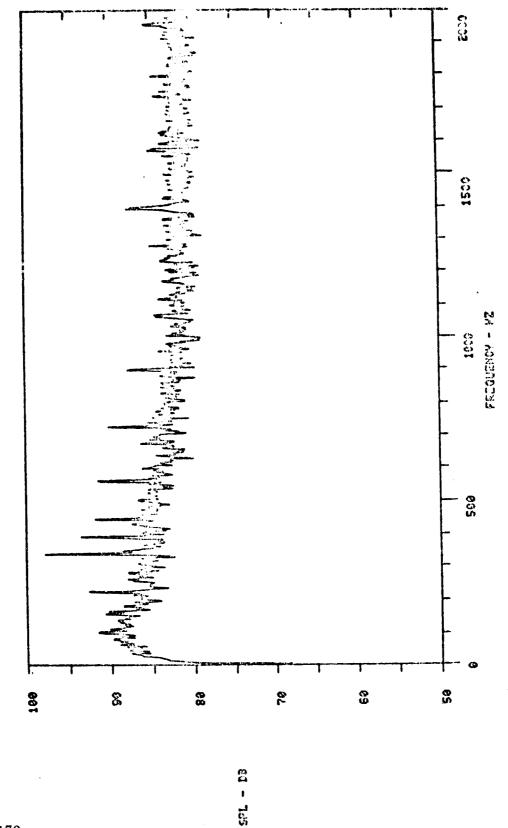


MIC 40 DEG RDG NO 565 FAN SPEED 3459 RPM GROPE 114.3 DB

RUM NO 2 % THRUST-85.54 G/S 1./ 0.00325 BS/SR 4695/ 8102





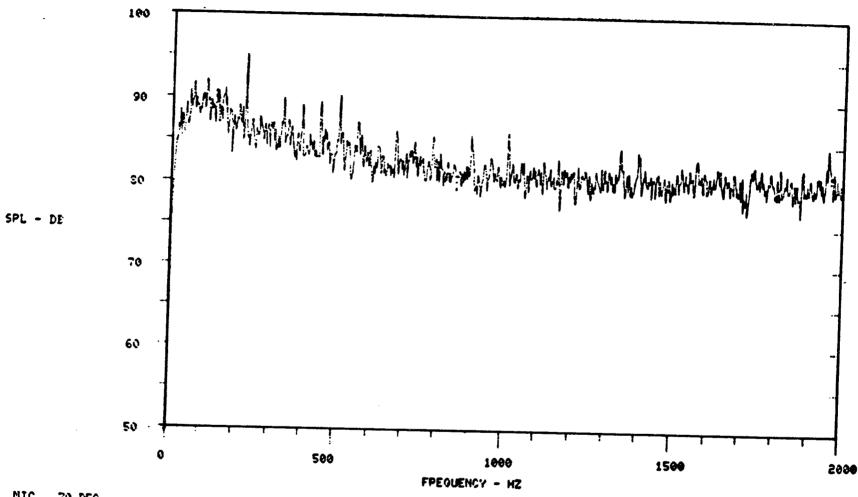


MIC 60 DEG RDG NO EGS FAN SPEED 3459 RPM 0ACPL 114.3 DB

KUN NO 2 X TANUTT-25.54

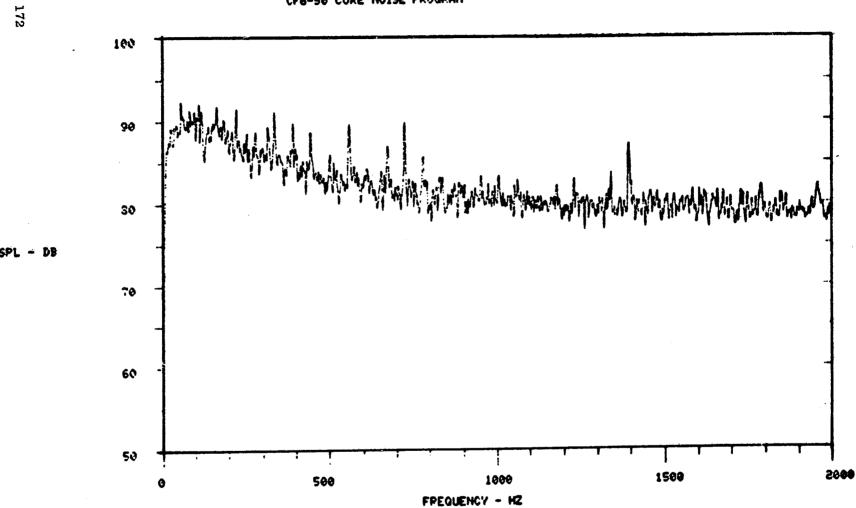
55/57 4523/ E153

CF6-50 CORE NOISE PROGRAM



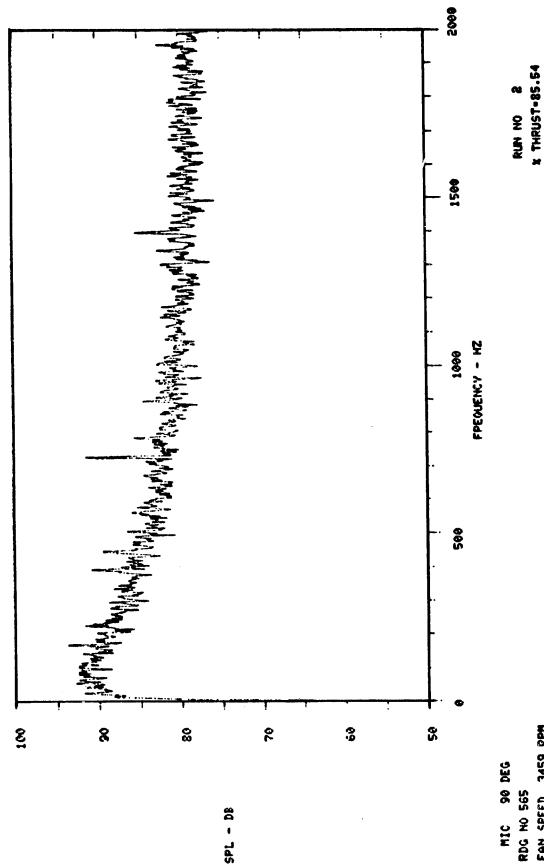
MIC 70 DEG RDG NO 565 FAN SPEED 3459 RPM OASPL 113.6 DB 171

BS/SR 4096/ 8192



MIC 80 DEG RDG NO 565 FAN SPEED 3459 RPM OASPL 113.6 DB

* THRUST-85.54 35/SR 4096/ 8192



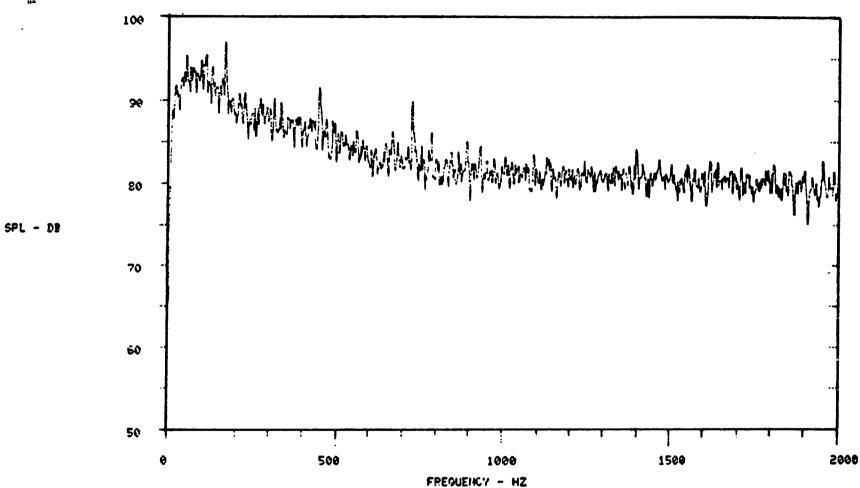
1.7 0.00325

BS/SR 4896/ 8192

173 173

FAN SPEED 3459 RPM

CF6-50 CORE NOISE PROGRAM

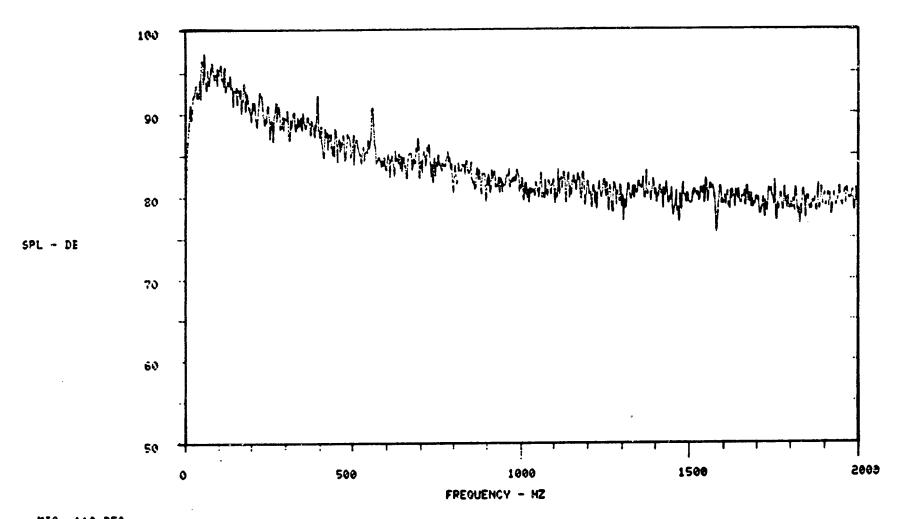


MIC 100 DEG RDG NO 565 FAN SPEED 3459 RPM CASPL 115.3 DB

RUN NO 2 THRUST-85.54 G/S 1./ 0.00325 28/SR 4096/ 8192

B,

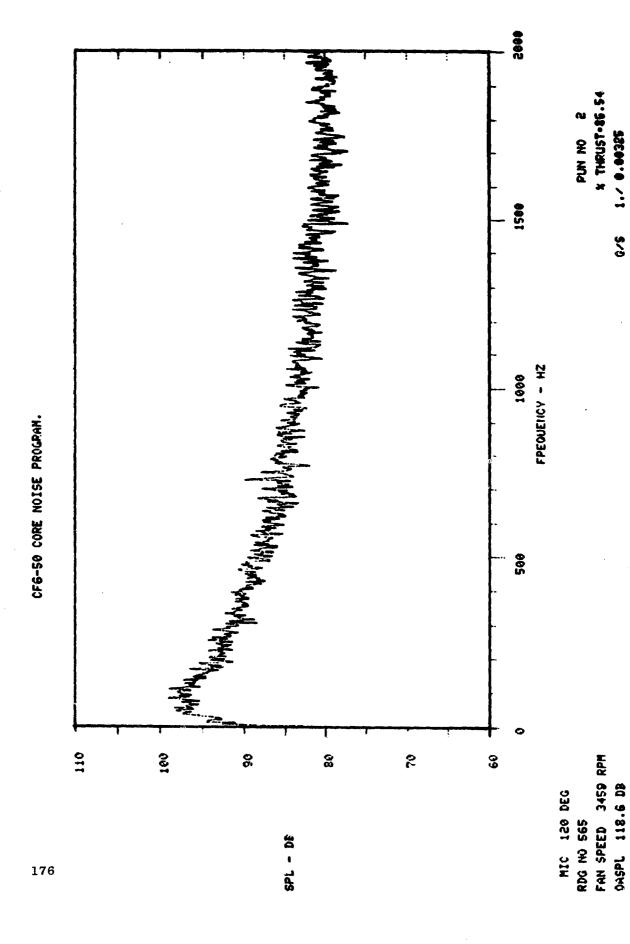
CF6-50 CORE NOISE PROGRAM



MIC 110 DEG RDG NO 565 FAN SPEED 3459 RPM OASPL 116.5 DB

RUN NO 2 % THRUST-85.54 G/S 1./ 0.00325 BS/SR 4096/ 8192

:



FUR HO 8 X THPUST-85.54 1./ 0.00325

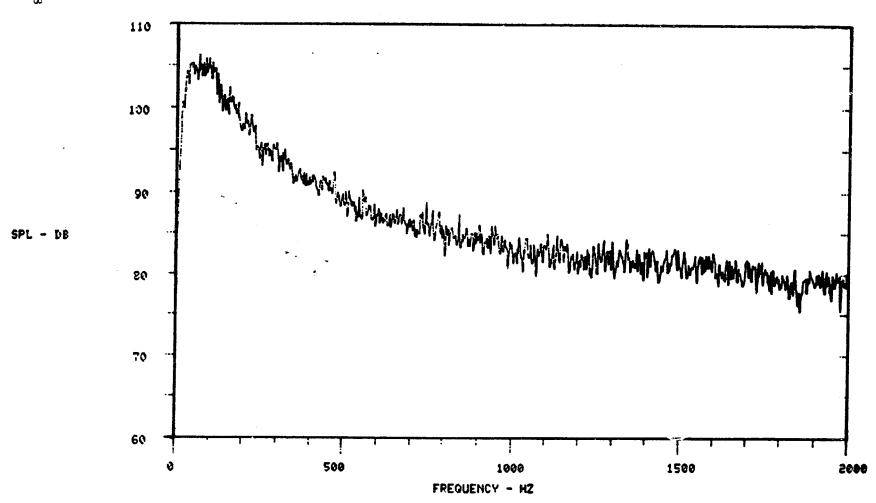
85/SR 4896/ 8192

80 6.711 142.00

RDG NO S65 FAN SPEED 3459 RPM

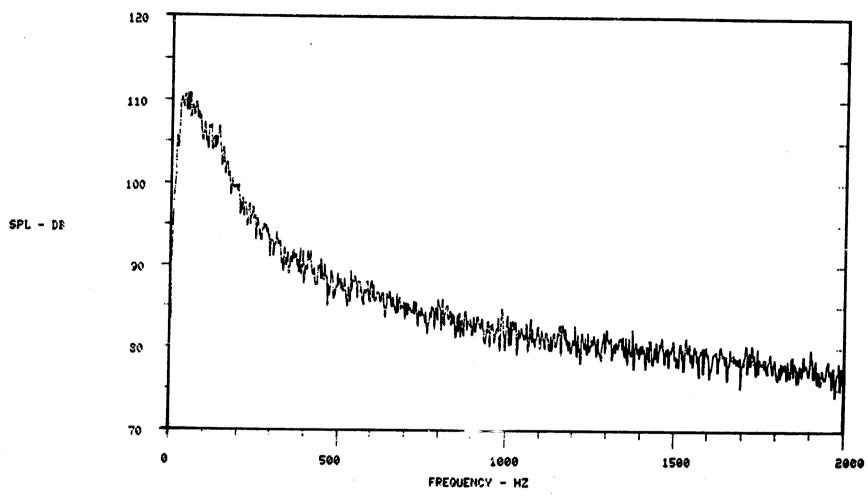
MIC 130 DEG

CF6-50 CORE NOISE PROGRAM.



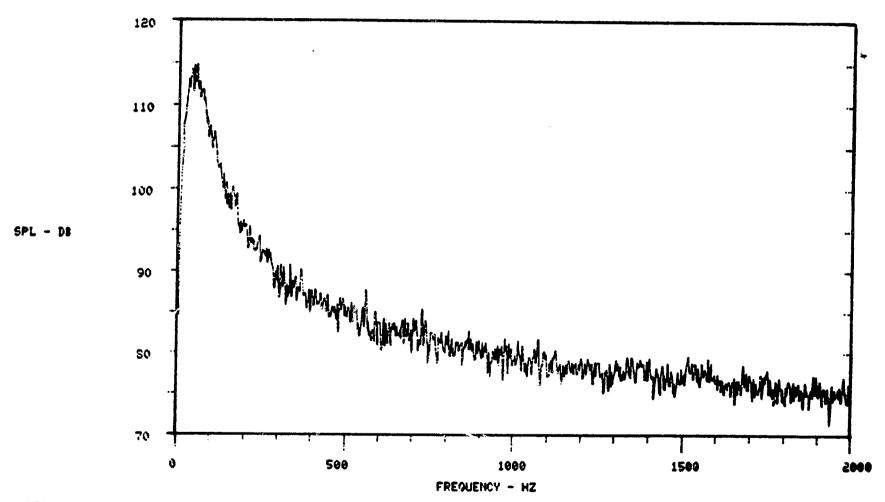
MIC 140 DEG RDG NO 565 FAN SPEED 3459 RPM OASPL 123.7 DB

RUN NO 8 % THRUST-85.54 G/S 1./ 0.01088 35/SR 4096/ 8198



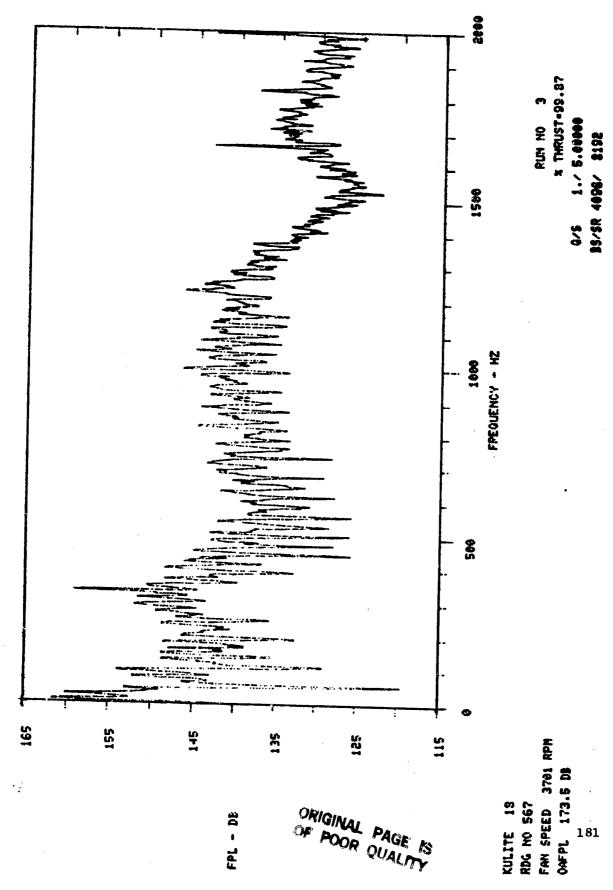
MIC 150 DEG RDG HO 565 FAN SPEED 3459 RPM 0ASPL 126.6 DB

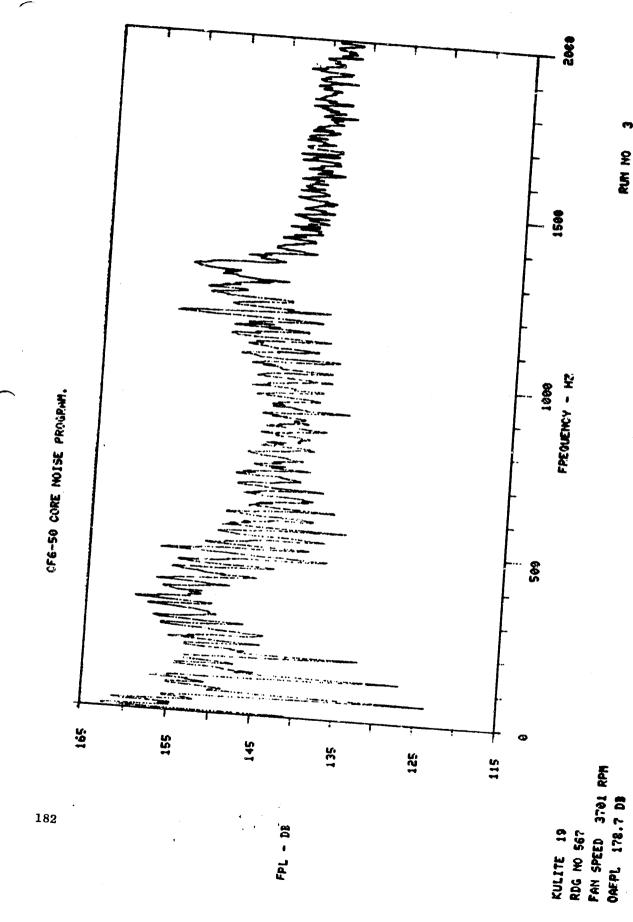
RUN NO



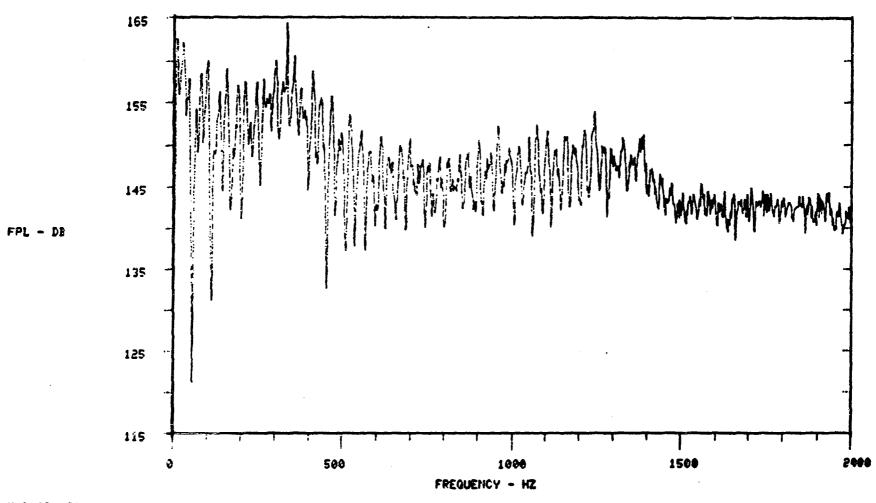
MIC 160 DEG RDG NO 565 FAN SPEED 3459 RPM OASPL 128.5 DB

RUN NO 2 * THRUST-85.54 G/S 1./ 0.01088

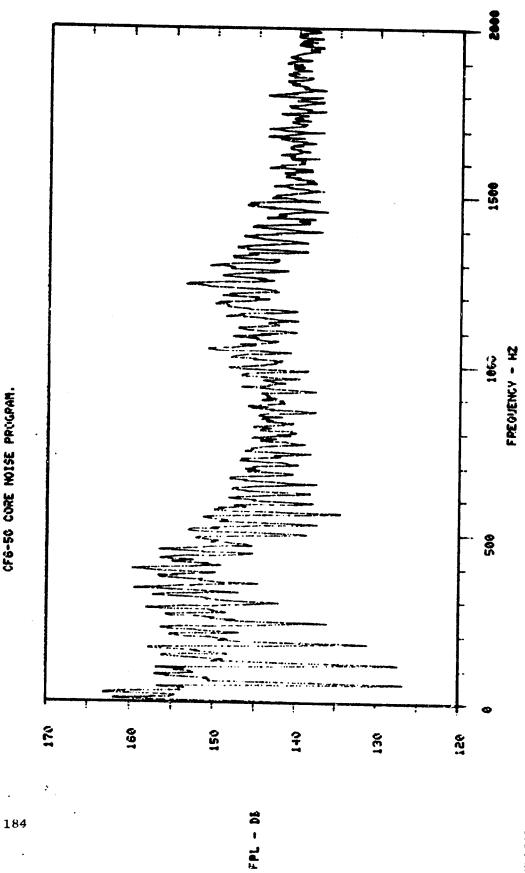




RUN NO 3 * THRUST-99.87 0/5 1./ 5.0000 38/SR 4006/ 8192

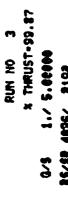


KULITE 20 RDG NO 567 FAN SPEED 3701 RPM OAFPL 180.3 DB



KULITE 21 RDG NN 567 FAN SPEED 3701 RPM OAFPL 178.9 DB

* THRUST-99.87 1.7 5.0000 **24 KG** 0/5 1./ **5.0001** 36/5R 4096/ 8192



158

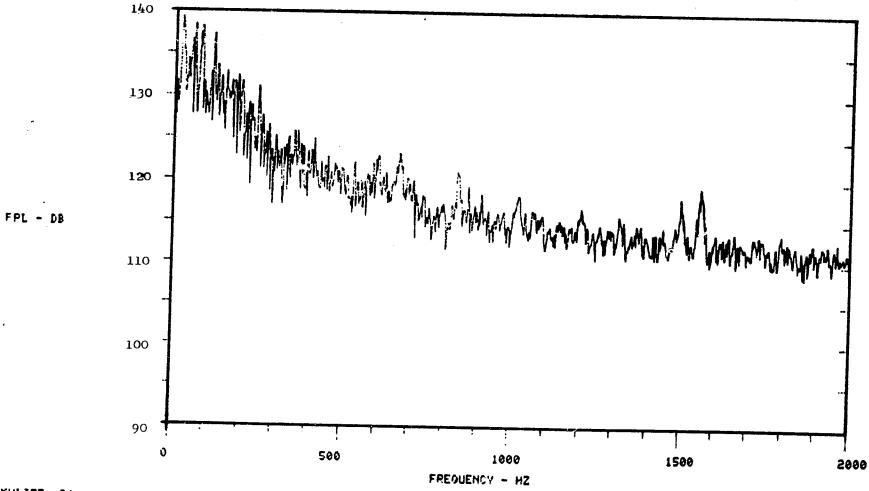
FREQUENCY - HZ

200

KULITE 22 RDG NO S67 FAN SPEED 3701 RPN OAFPL 175.2 D8

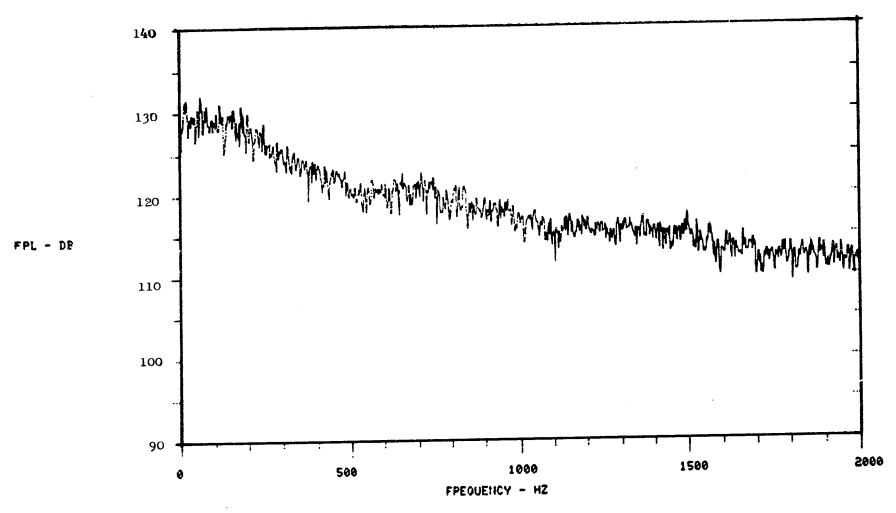
185

BS/SR 4096/ 8192



KULITE 24 RDG NO 567 FAN SPEED 3701 RPM CAFPL 153.9 DB

RUN NO 3 * THRUST-99.87 G/S 1./ 5.00000 BS/SR 4696/ 8192



KULITE 26 RDG NO 56? FAN SPEED 3701 RFM OAFPL 151-9 DB 187

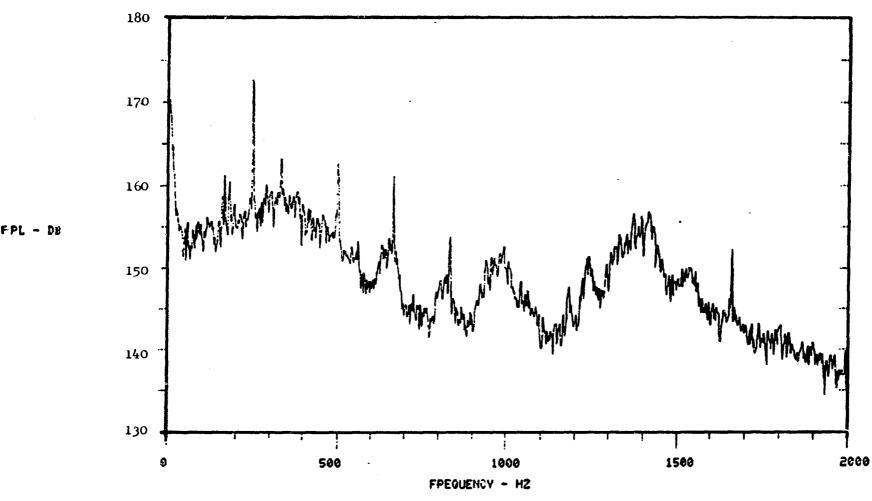
RUN NO * THRUST-99.87 1./ 5.00000 BS/SR 4096/ 8192

FREQUENCY - HZ

KULITE 23 RDG NO 567 FAN SPEED 3701 RPM 0AFPL 184.1 DB

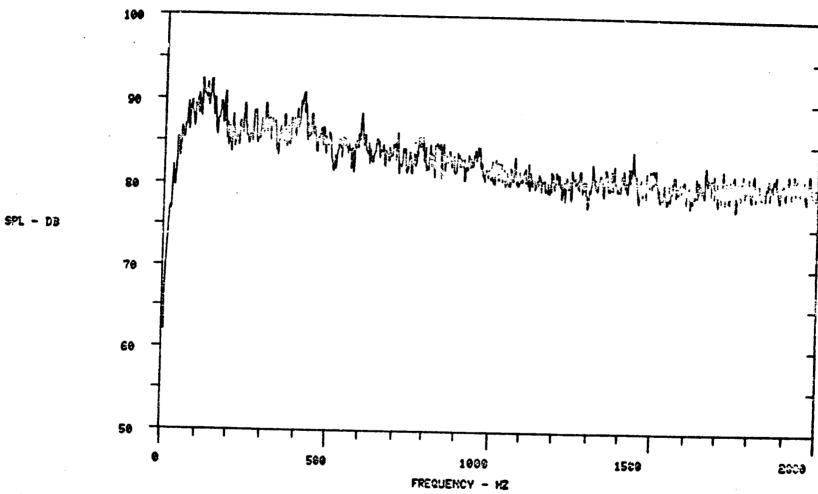
* THRUST-99.87 BS/SR 4096/ 8192

2000



KULITE 25 RDG NO 567 FAN SPEED 3701 RPM OAFPL 184.2 DB 189

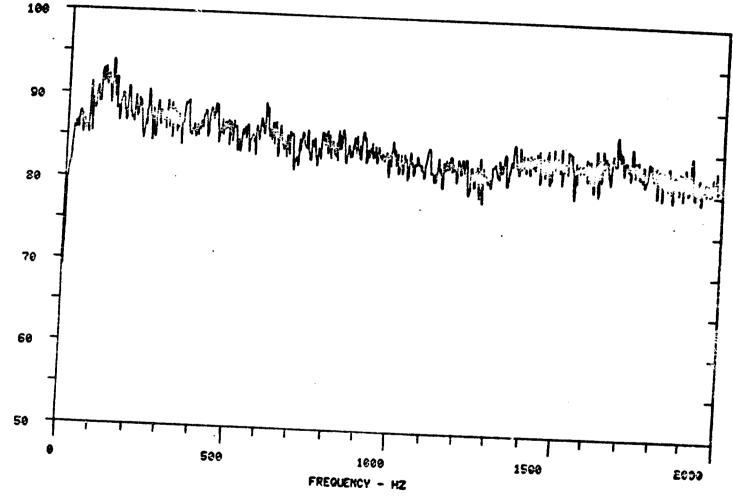
RUN NO 1./ 1.00000 BS/SR 4096/ 8192



HIC 30 DEQ RDG NO 567 FAN SPEED 3701 RPM CASPL 113.9 DB

* THRUST-63.87 DS/SR 4606/ 8152





MIC 49 DEG RDG NO 567 FAN CPEED 3761 RPM OASPL 115.2 DB

RUM NO 3 4 THRUST-53.87 1./ 0.00325 4056/ 8192

:

RUN HO 3 x THRUST-89.87

ES/SR 4053/ \$152

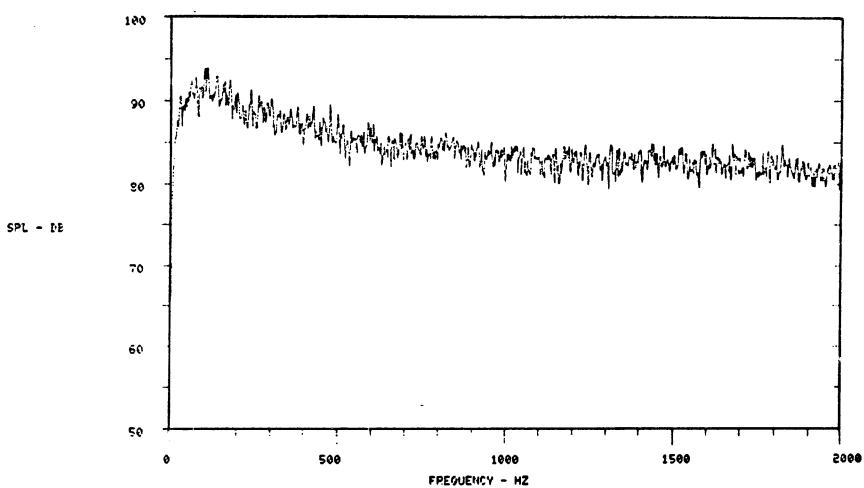
Fig. 5250 3701 898 0501 115.1 U3

59 DEC

CF6-50 CORE NOISE PROGRAM.

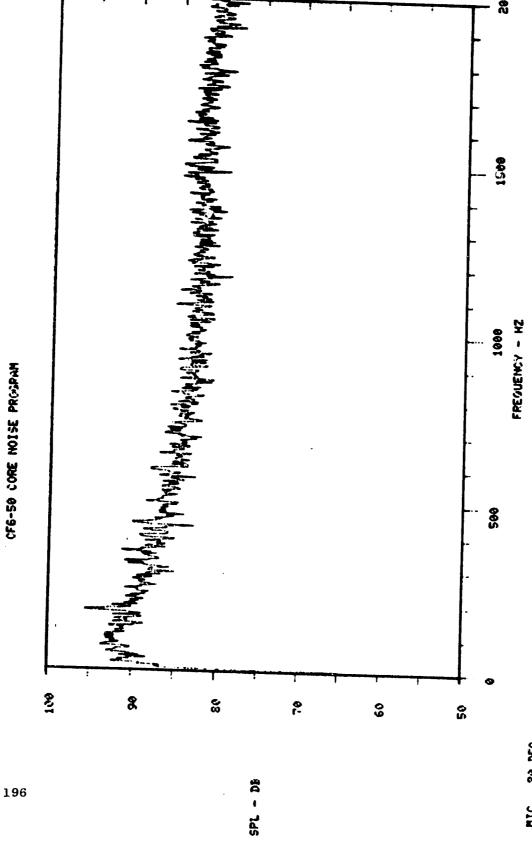
RUN NO S * TRIUST-03.87 6/5 1./ 0.0000 \$5/58 493/ \$192

£353



70 DEG MIC RDG NO 567 FAN SPEED 3701 RPM 0ASPL 115.5 DB 195

* THRUST-99.87 BS/SR 4096/ 8192

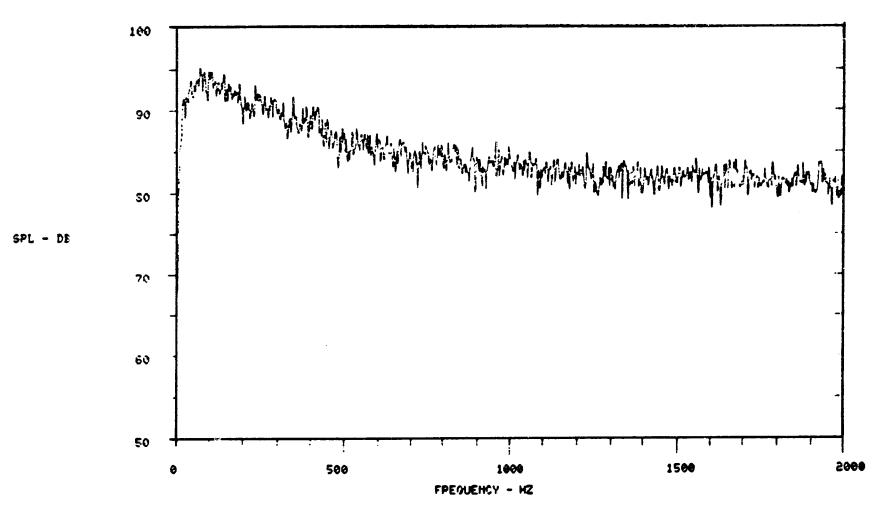


MIC 80 DEG RDG NO 567 FAM SPEED 3701 RPM 04SPL 115.8 DB

* THRUST-99.87 1.7 0.00325

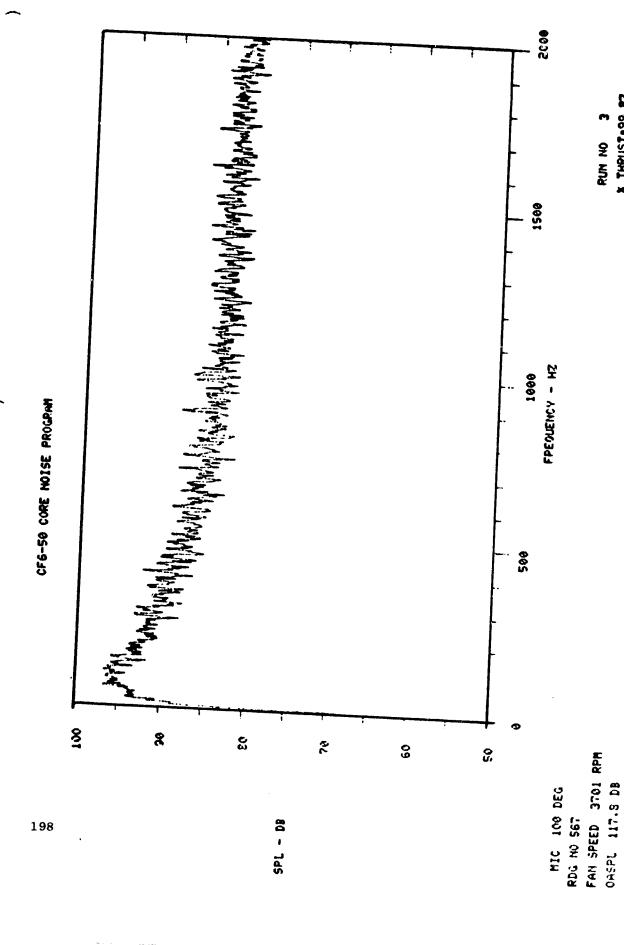
35 15

35/5R 4096/ 8192

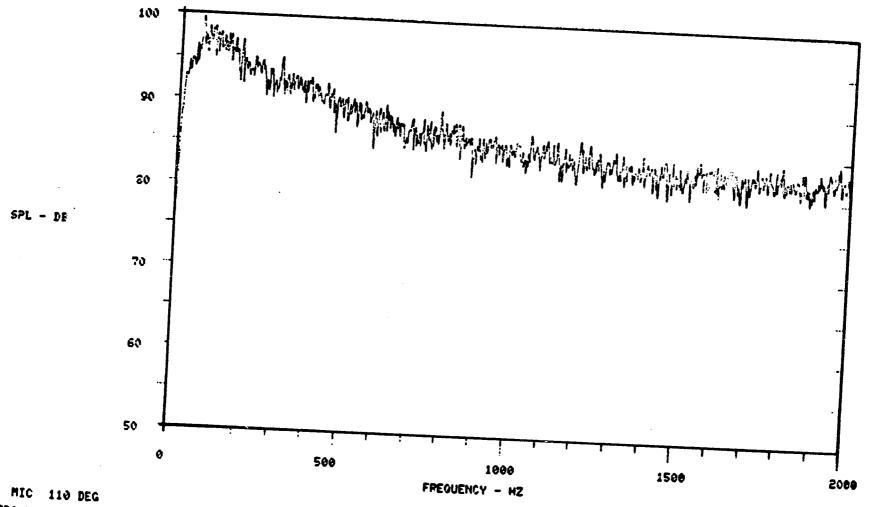


MIC 90 DEG RDG NO 567 FAN SPEED 3701 RPM OASPL 116.5 DB 197

* THRUST-99.87 1./ 0.00325



RUN NO 3 x THRUST-99.87 G/S 1./ 0.00325 BS/SR 4096/ 8192



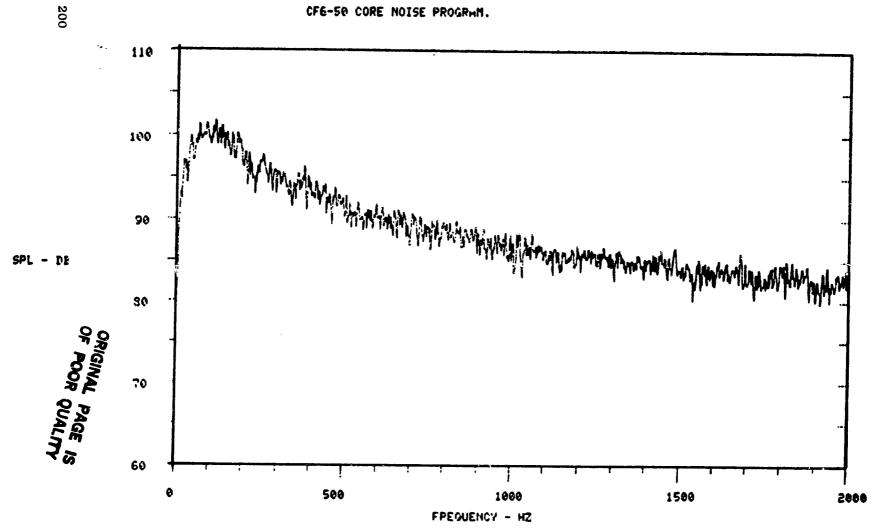
MIC 110 DEG RDG NO 567 FAN SPEED 3701 RPM CASPL 119.2 DB

199

PUN NO 3 % THRUST-99.87

G/S 1./ 0.00325 BS/SR 4096/ 8192



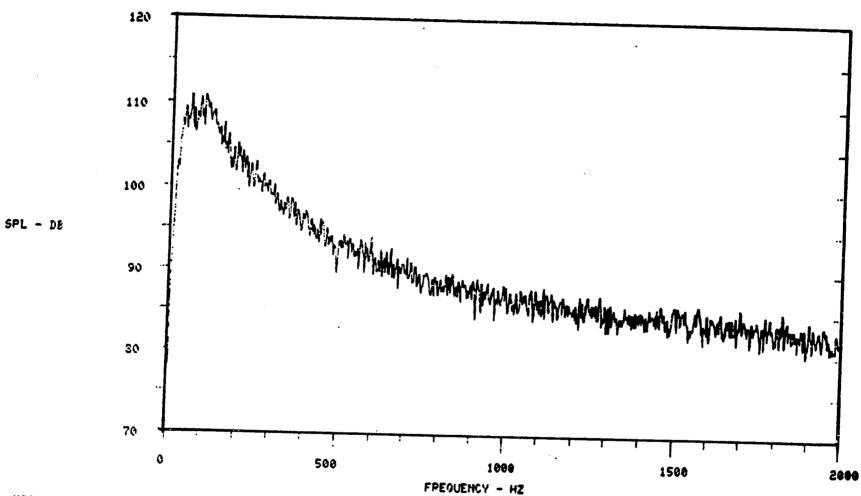


MIC 120 DEG **RDG NO 567** FAN SPEED 3701 RPM 0ASPL 121.9 DB

RUN NO * THRUST-99.87 1./ 0.01028 G/5 BS/SR 4896/ 8192

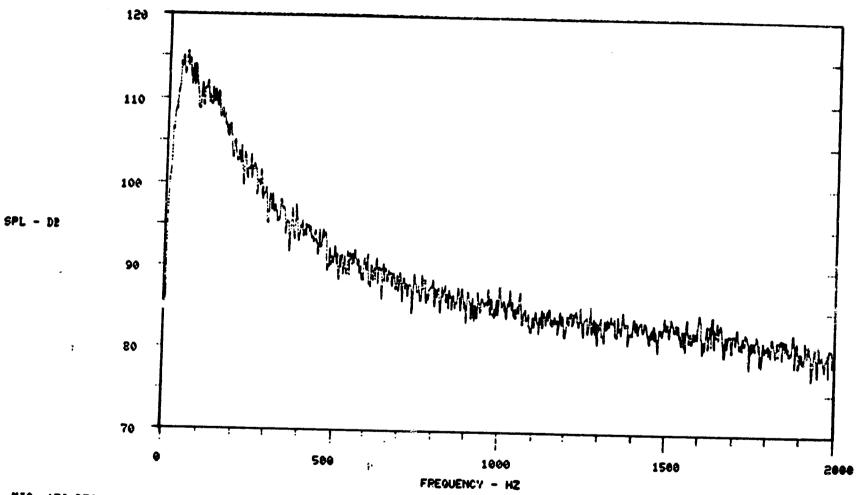
RUN NO 3 X THRUST-92.87 Q/S 1./ 0.01623 BS/ER 4095/ 8193

665PL 181.7 DS



MIC 140 DEG RDG NO 567 FAN SPEED 3701 RPM OASPL 128.1 DB

RUH NO 3 * THRUST-99.87 35/SR 4096/ 8192



MIC 150 DEG RDG NO 56? FAN SPEED 3701 RPM OASPL 131.0 DB

* THPUST-99.87 1./ 0.01628 BS/SR 4096/ 8192

RUN NO 3 X THRUST-99.87 1./ 0.01028 PS/5R 4096/ 8192

APPENDIX B One-Third Octave Band Spectra for CF6-50 Core Noise Measurements Program

• One-Third Octave Band Spectra for CF6-50

Core Noise Measurements Program

This appendix contains the one-third octave band fluctuating pressure level(FPL) spectra from the internal Kulites (9) and the sound pressure level (SPL) spectra from the farfield ground mounted microphones (15) at the eight test conditions covering the operating range of the CF6-50 engine. The 1/3 octaveband results from the internal Kulites are for the range of frequencies from 50 to 5000 Hz. Corrections for ambient frequency response of the five waveguide sensors in the combustor region have been applied to the (as measured) data. No corrections were applied to the flush mounted core probe Kulites or fuel nozzle sensors.

The farfield 1/3 octaveband results have been corrected to standard day (59°F,70% relative humidity) and freefield conditions. Spectra are displayed from 50 to 10000 Hz.

Tabulations of the 1/3 octave band FPL's and SPL's and spectral plots for each sensor are included in Tables 4 and 5, respectively.

Table 4. Internal Fluctuating Pressure Levels

| | a) 3.8% F _n , RDG 544 | ь, 22.8% F _n , RDG 547 |
|--|--|---|
| Plane 3 (deg) | 3.0 3.5 3.5 3.5 4.0 8.0A 8.0B F/N F/N 16.0 42.0 102.0 292.0 92.0 270.0 270.0 42.0 102.0 | 3.0 3.5 3.5 4.0 8.0A 8.0B F/N F.N 16.0 42.0 102.0 282.0 92.0 270.0 270.0 42.0 102.0 |
| FREQ 50. 63. 80. 100. 250. 250. 315. 400. 500. 630. 1000. 1250. 1600. 2000. 2500. | 136.3 137.8 138.3 137.0 135.8 118.3 116.3 152.0 149.1 136.8 139.3 139.5 138.3 136.5 118.0 117.3 156.8 152.7 139.8 142.3 143.3 142.0 137.8 116.8 114.0 157.3 150.0 143.0 145.1 144.7 144.7 140.8 117.0 114.3 173.5 152.0 143.3 146.0 145.8 144.3 142.0 116.0 115.0 165.5 149.0 138.7 145.1 144.8 143.3 140.3 115.0 111.8 178.0 161.8 136.6 143.5 145.0 143.6 140.9 118.5 115.3 161.8 154.0 138.8 145.4 144.5 142.0 141.2 120.8 118.3 146.0 155.5 134.8 142.1 142.0 139.1 139.0 118.8 116.3 143.3 160.3 133.0 141.0 140.6 138.5 138.3 120.0 17.0 143.0 159.5 134.3 140.4 141.0 138.0 139.5 119.8 117.8 145.0 155.0 135.3 138.8 139.4 136.8 138.5 117.3 115.8 142.3 150.3 133.4 139.4 139.4 136.8 138.5 117.3 115.8 142.3 150.3 133.4 139.4 136.8 134.4 140.5 113.5 112.0 149.0 152.5 131.2 134.6 136.8 132.8 145.2 118.3 116.0 142.8 161.0 131.5 132.8 133.0 130.3 144.0 113.8 115.5 136.5 143.5 136.5 132.5 134.0 130.5 145.0 111.8 139.5 149.2 138.5 134.6 132.3 130.1 144.5 109.8 110.3 142.0 143.5 140.2 134.0 131.7 129.0 141.4 107.8 106.0 146.3 142.5 | 142 2 141 8 143 0 141 5 147 C 126 0 126 0 155 8 155 5 148 0 149 5 150 8 150 5 145 5 124 8 125 5 151 3 150 8 148 3 150 5 151 8 151 9 145 0 123 8 125 5 154 0 153 5 144 5 147 1 147 7 148 9 146 3 122 0 125 3 153 0 152 C 147 8 152 9 151 5 151 5 147 5 121 0 124 0 157 0 154 5 145 7 150 9 151 5 151 5 147 5 121 0 124 0 157 0 154 5 145 7 150 9 151 5 151 5 147 5 121 0 124 0 157 0 154 5 145 7 150 9 151 5 151 5 147 5 121 0 124 0 157 0 154 5 145 4 152 3 152 6 152 1 148 1 121 5 123 3 169 0 164 C 147 0 153 6 154 8 153 0 149 9 123 8 123 5 160 0 160 5 148 0 156 4 156 0 155 4 150 5 125 0 124 5 158 8 154 C 146 5 154 8 154 1 154 5 151 0 125 8 126 3 160 5 166 5 145 0 153 4 153 5 152 3 151 0 125 8 126 3 160 5 166 5 145 8 151 3 152 4 150 5 150 2 122 0 120 5 164 8 160 5 146 4 151 4 152 4 150 8 149 1 121 8 119 8 151 0 155 5 147 4 154 0 155 1 152 9 151 5 121 0 118 3 152 0 160 8 147 9 155 8 157 6 156 6 155 1 122 0 118 5 164 5 163 0 144 0 151 1 152 3 151 0 155 5 122 5 118 3 161 8 157 5 141 2 148 3 149 8 148 3 153 5 124 0 119 0 155 3 163 8 144 0 151 1 152 3 151 0 155 5 122 5 118 3 161 8 157 5 141 2 148 3 149 8 148 3 153 5 124 0 119 0 155 3 153 8 144 0 147 8 149 0 147 3 155 2 125 0 119 0 154 5 155 8 149 3 146 9 146 3 145 9 155 0 124 8 122 0 151 0 150 8 151 0 145 3 145 5 145 3 152 6 125 5 127 6 152 5 151 5 |
| OVERALL FPL | 141.3 134.4 132.0 129.6 140.3 109.0 103.8 155.3 144.0 151.3 154.4 154.4 153.1 154.6 130.1 128.1 179.7 135.4 | 152 0 145.1 145.2 144.6 150.8 123.5 122.0 152.8 152 8 160.5 165.0 165.7 164.8 164.7 136.9 137.5 174.0 173 1 |

MANUD AOOM TO

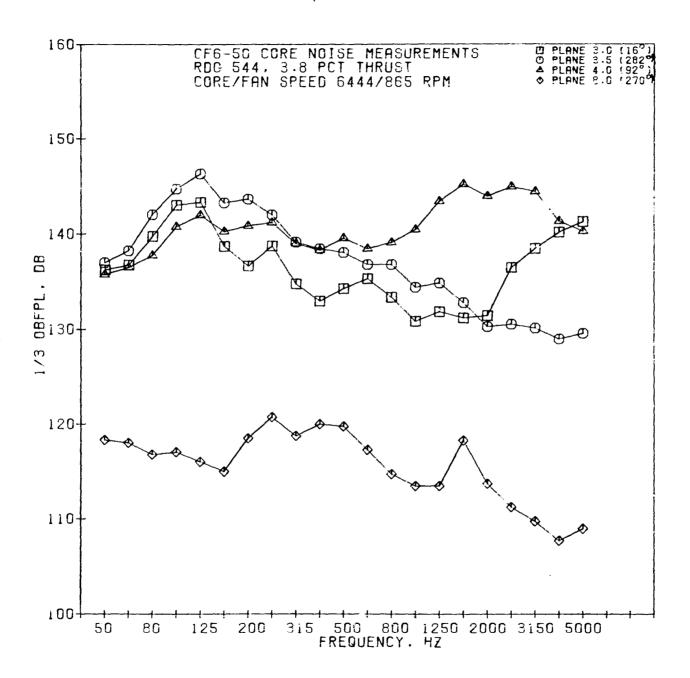
Table 4. Internal Pluctuating Pressure Levels (continued)

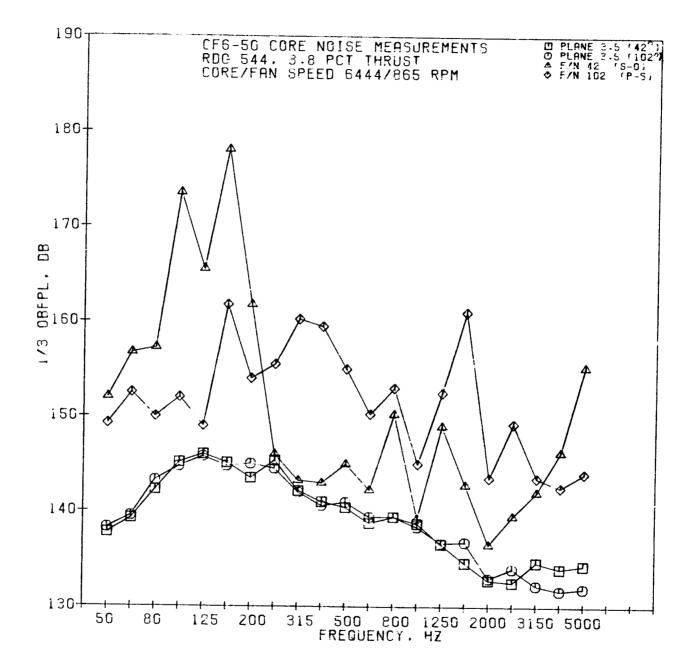
| | c) 30.9% F _n , RDG 551 | d) 36.5% F _n , RDG 557 |
|-----------------|---|---|
| Plane | 3.0 3.5 3.5 3.5 4.0 8.0A 8.0B F/N F/N | 3.0 3.5 3.5 3.5 4.0 8.0A 8.0B F/N F/N |
| θ (deg) FREG | 16.0 42.0 102.0 282.0 92.0 270.0 270.0 42.0 102.0 | 16.0 42.0 102.0 282.0 92.0 270.0 270.0 42.0 102.0 |
| 50. | 141.5 141.5 142.5 143.0 148.3 127.5 127.3 154.0 154.3 | 142.5 143.0 143.5 145.3 149.3 128.0 128.0 153.8 153.5 |
| 63. | 149.5 151.3 151.5 151.5 148.0 127.3 127.5 153.0 152.3 | 151.3 151.8 152.3 152.0 149.5 128.3 128.0 155.5 153.0 |
| 80. | 149.5 151.5 152.5 152.0 147.0 125.8 128.3 154.3 153.3 | 150.8 153.3 153.5 154.3 148.8 127.3 129.0 155.3 154.3 |
| 100. 125. | 145.5 149.1 150.0 150.7 147.8 124.8 127.5 153.5 153.0 | 146.3 151.4 151.2 152.5 148.8 125.8 128.0 154.5 154.0 |
| 160. | 149.5 152.5 152.8 153.0 148.5 126.3 131.8 158.3 157.0 148.0 152.6 153.0 153.5 149.3 126.0 126.8 158.3 157.3 | 150.3 153.0 153.5 154.0 149.5 127.5 129.8 158.8 158.3 |
| 200 | 147.9 152.5 153.5 153.6 149.6 126.5 124.5 169.3 165.5 | 151.5 153.9 154.0 154.3 150.5 127.3 128.0 161.5 160.5 |
| 250. | 147.5 154.4 155.8 154.5 149.2 125.0 123.3 160.8 161.0 | 151.9 154.0 154.3 154.9 149.9 127.5 126.3 168.8 166.0 |
| 315. | 148.5 157.4 157.3 156.1 151.0 126.3 124.0 159.8 164.8 | 148.5 155.6 156.3 155.5 149.7 125.5 124.3 162.3 162.0 |
| 400. | 148.5 156.3 156.4 156.5 152.3 126.5 124.0 159.0 166.5 | 150.0 157.9 158.5 157.6 151.3 127.0 124.5 161.8 166.0 150.0 157.8 157.4 158.7 152.8 128.0 125.0 161.0 167.0 |
| 500. | 146.0 155.1 155.5 154.3 152.5 125.3 122.5 164.8 163.3 | 147.3 156.4 156.5 155.8 153.0 127.0 124.0 165.0 163.3 |
| 630. | 148.0 153.5 154.4 153.3 151.7 125.0 122.0 167.5 164.0 | 149.5 155.8 155.9 154.6 153.5 127.5 123.5 170.3 165.3 |
| 800. | 147.9 152.1 153.4 152.3 150.9 123.3 121.8 152.5 156.5 | 149.1 154.6 155.1 154.0 152.1 126.3 123.0 154.2 158.0 |
| 1000. | 148.9 155.5 156.4 154.9 152.2 122.5 120.8 153.0 161.3 | 150.6 156.5 157.9 155.9 153.0 125.0 123.8 154.0 162.8 |
| 1250. | 151.1 157.8 159.4 159.4 156.9 123.3 122.0 166.0 164.3 | 152.1 159.5 160.9 161.1 157.6 125.5 124.8 167.3 165.8 |
| 1600. | 145.7 153.4 154.8 153.8 156.7 122.8 121.5 163.3 160.5 | 146.7 155.4 156.3 155.8 158.2 125.0 123.5 165.8 161.8 |
| 2000. | 142.0 150.8 152.3 151.3 155.0 123.0 120.5 156.0 155.8 | 143.2 152.8 154.0 153.3 155.5 125.0 122.8 155.3 154.5 |
| 2500. | 144.8 150.5 151.8 150.3 157.0 124.0 121.8 156.3 154.5 | 145.8 152.8 153.5 152.5 158.5 125.3 123.8 155.8 154.8 |
| 3150. | 149.5 148.6 149.0 148.9 156.2 125.3 122.0 153.3 150.5 | 151.3 150.6 151.0 150.4 157.2 126.5 124.0 153.3 151.0 |
| 4000. | 152.2 147.0 148.0 148.0 153.6 126.0 125.0 153.3 153.3 | 152.7 148.8 149.5 149.5 155.4 126.8 125.0 152.8 152.5 |
| 5000. | 153.0 147.1 147.2 147.1 153.8 125.3 123.8 153.3 155.3 | 153.8 148.9 149.5 149 1 155.8 126.8 127.0 155.8 155.0 |
| OVERALL | 161.9 166.5 167.3 166.7 166.2 138.6 138.6 174.8 174.1 | 163.3 167.9 168 5 188.3 167 3 139.9 139 3 176 0 175.0 |

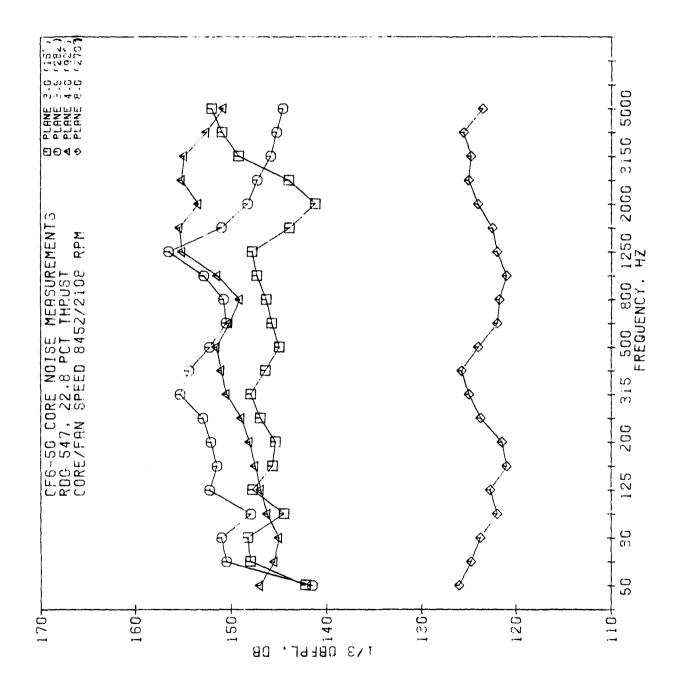
Table 4. Internal Fluctuating Pressure Levels (continued)

| | e) 45.5 % F _n , RDG 561 | 1) 67.8 % F _n , RDG 563 |
|---|---|---|
| Plane θ (deg) FREQ | 3.0 3.5 3.5 3.5 4.0 8.0A 8.0B F/N F/N 16.0 42.0 102.0 282.0 92.0 270.0 270.0 42.0 102.0 | 3.0 3.5 3.5 3.5 4.0 8.0A 8.0B F/N F/N 16.0 42.0 102.0 282.0 92.0 270.0 270.0 42.0 102.0 143.3 149.0 149.5 152.8 157.3 132.5 130.0 158.5 158.0 |
| 63. 80. 100. 125. 160. 200. | 151.8 152.8 153.3 152.3 152.0 131.0 129.5 155.5 154.0 151.0 154.8 155.3 155.5 151.0 128.0 129.3 155.5 155.0 147.8 152.6 153.2 153.7 150.0 128.0 129.3 156.5 155.8 150.5 154.5 154.5 155.0 150.7 129.3 130.5 158.3 159.0 151.7 154.4 155.0 155.5 153.5 131.8 131.0 162.0 164.0 152.4 155.5 155.8 156.1 153.9 132.8 129.0 167.8 166.8 | 151.3 153.3 155.0 153.8 158.3 133.0 131.3 158.5 158.5 152.0 156.3 157.8 157.3 157.0 131.8 131.3 156.3 156.8 150.5 155.4 156.7 156.7 156.8 132.3 132.5 157.5 157.5 150.5 155.8 156.3 156.5 156.2 132.8 133.3 159.0 159.3 153.5 157.6 158.3 158.0 158.0 135.3 134.5 165.3 162.8 153.6 159.5 159.0 159.9 157.6 135.5 133.5 165.5 165.8 |
| 250. 315. 400. 500. 630. | 149.0 157.1 157.8 157.0 151.5 126.8 126.0 163.0 163.8 151.5 160.1 159.8 158.6 152.8 128.5 126.0 163.0 166.8 150.7 159.3 158.9 160.2 153.8 129.8 126.8 161.8 167.3 148.3 158.1 157.2 157.5 155.0 127.3 125.5 164.8 164.3 151.5 157.3 157.9 156.5 155.2 128.8 125.5 170.8 167.0 150.9 156.4 156.1 155.5 153.4 126.3 125.5 155.5 159.0 | 153.0 160.9 161.3 159.8 156.5 132.3 131.0 169.0 169.5 154.5 163.6 164.3 161.9 157.8 134.5 131.5 166.0 168.3 153.2 162.5 162.9 164.2 158.8 134.5 132.0 164.0 167.3 150.5 161.4 160.7 160.8 159.5 132.8 131.0 165.8 166.5 153.5 158.8 159.9 158.8 158.5 133.3 130.3 168.8 167.0 152.9 158.1 159.6 158.0 157.1 132.3 132.0 157.0 162.3 |
| 1000. 1250. 1600. 2000. 2500. 3150. 4000. | 152.4 158.0 158.9 157.1 154.7 125.5 126.5 154.3 163.8 153.6 161.0 161.6 163.1 159.1 127.5 127.5 169.3 167.3 147.5 157.9 157.8 157.5 160.0 126.5 127.0 167.5 163.3 145.0 155.0 156.0 155.0 157.0 126.8 125.8 157.0 156.3 146.0 154.8 155.5 155.0 160.2 127.0 126.3 156.5 156.0 151.8 153.4 153.8 152.9 159.2 127.8 125.8 155.0 152.8 154.2 151.0 151.0 150.8 156.9 129.3 126.8 154.8 153.5 | 155.9 160.0 162.9 159.1 157.2 132.3 132.0 157.0 166.3 157.6 164.5 164.4 165.4 161.9 133.0 132.3 171.3 168.0 150.2 159.6 161.5 159.8 163.5 132.0 130.8 169.8 166.5 149.7 157.8 159.8 158.3 160.5 130.8 131.0 157.0 156.8 148.3 157.5 159.0 158.0 164.2 131.8 131.0 158.3 157.3 153.5 156.6 157.3 156.6 161.7 131.8 130.0 158.3 156.6 |
| 5000. OVERALL FPL | 154.2 151.0 151.0 150.8 156.9 129.3 126.8 154.8 153.5 155.0 150.6 151.5 151.1 156.0 132.8 131.0 155.8 156.3 164.3 169.6 169.9 169.9 169.0 142.3 141.3 176.7 176.2 | 156.5 154.5 155.5 155.0 159.6 131.8 130.0 158.3 156.3 157.8 153.9 155.2 153.9 160.3 132.0 130.3 158.0 160.5 166.7 172.5 173.3 172.7 172.8 146.2 144.9 178.0 177.7 |

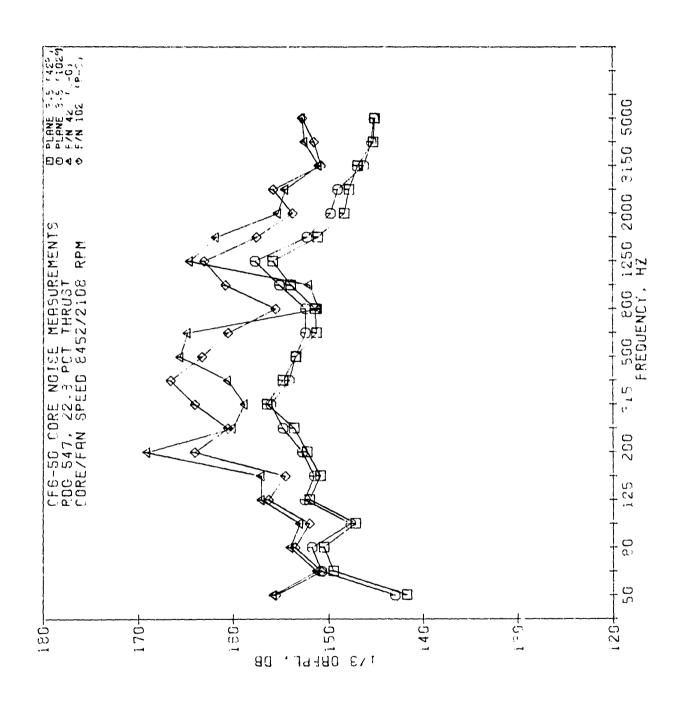
| | g) 85.5% F _n , RDG 565 | h) 99.8% F _n , RDG 567 |
|-----------------|--|--|
| Plane | 3.0 3.5 3.5 3.5 4.0 8.0A 8.0B /N F/N 16.0 42.0 102.0 262.0 92.0 270.0 270.0 42.0 102.0 | 3.0 3.5 3.5 3.5 4.0 8.0A 8.0B F/N F/N 16.0 42.0 102.0 282.0 92.0 270.0 270.0 42.0 102.0 |
| θ (deg) FREQ | 145 F 151 0 150 0 154 5 154 0 104 0 104 0 150 0 155 | 149.5 154.8 156.0 157.0 153.0 134.0 133.0 157.0 158.5 |
| 50. 63. | 145.5 151.8 152.0 154.5 154.8 134.3 131.0 158.0 157.0 152.3 154.5 156.0 154.5 157.0 135.8 134.0 160.3 160.5 | 152.0 154.5 156.8 154.8 157.0 137.3 135.5 159.5 161.5 |
| 80. | 152.3 154.5 156.0 154.5 157.0 135.8 134.0 160.3 160.5 152.3 157.8 159.5 158.8 155.0 135.0 133.0 157.8 158.3 | 153.8 159.3 161.0 160.3 154.8 134.3 135.3 158.5 160.5 |
| 100. | 152.8 156.6 156.7 157.7 155.3 136.0 133.8 160.0 160.5 | 155.0 159.4 161.5 160.2 155.0 134.5 136.0 159.3 162.3 |
| 125. | 151.8 156.5 158.0 158.3 155.2 136.5 135.0 162.5 162.5 | 153.3 158.0 160.0 158.8 155.5 137.0 138.0 161.8 164.0 |
| 160. | 155.0 158.9 160.0 160.3 158.3 138.5 137.3 169.8 167.3 | 155.5 161.4 162.3 162.8 158.5 139.0 139.5 167.5 167.5 |
| 200. | 153.9 161.0 161.5 161.6 157.1 137.8 137.0 167.3 167.5 | 155.4 163.0 163.8 162.4 157.1 139.3 139.5 167.3 168.3 |
| 250. | 154.5 162.9 163.3 161.8 156.7 135.8 135.5 171.8 172.0 | 156.8 164.9 165.3 163.3 157.2 135.3 138.0 173.5 174.3 |
| 315 | 157.3 165.6 166.0 163.9 158.8 138.3 135.8 168.3 170.0 | 161.8 167.6 169.0 165.6 158.3 137.8 137.3 175.5 171.8 |
| 400. | 155.7 165.0 164.9 165.7 160.3 137.3 135.8 166.3 169.3 | 157.5 167.0 167.9 168.0 160.3 139.0 137.0 171.3 171.0 |
| 500. | 152.3 162.1 162.7 162.5 161.3 135.3 133.8 166.8 168.3 | 153.8 164.4 164.5 165.0 161.5 138.8 136.0 168.0 169.8 |
| 630. | 153.8 159.3 160.6 159.5 159.2 136.0 133.3 168.5 167.0 | 154.3 160.8 162.6 160.8 159.7 140.8 136.3 167.8 167.8 |
| 800. | 154.6 159.1 160.9 158.8 157.9 134.8 134.5 158.5 163.0 | 155.9 161.1 162.4 160.3 157.6 138.5 136.8 159.3 163.8 |
| 1000. | 157.4 161.2 163.6 160.6 158.7 134.8 134.5 158.8 166.8 | 158.6 163.2 165.4 162.1 158.0 138.0 134.5 159.0 166.5 |
| 1250. | 158.6 167.5 166.6 165.9 163.9 134.8 133.3 172.8 169.3 | 159.9 169.5 168.4 166.9 163.4 138.3 134.8 173.3 169.5 |
| 1600. | 150.5 161.1 162.5 161.0 164.7 134.0 132.5 171.0 167.5 | 151.5 162.9 164.0 162.5 164.2 1,9.0 103.8 172.5 168.8 |
| 2000. | 150.7 159.3 161.5 159.8 161.5 133.0 132.3 158.8 158.3 | 151.5 161.0 162.8 161.0 161.5 138.0 133.0 159.5 160.0 |
| 2500. | 150.0 159.0 160.5 159.8 165.7 133.0 132.3 159.8 158.5 | 151.5 160.8 162.0 161.3 165.2 138.5 132.8 161.5 159.5 |
| 3150. | 154.8 158.6 158.5 158.1 163.5 133.3 131.8 160.5 159.0 | 155.8 159.6 160.5 159.4 162.5 138.5 132.8 161.8 160.3 |
| 1000. | 158.7 156.3 156.7 156.8 160.9 133.0 131.5 158.3 159.5 | 160.5 157.3 159.0 158.0 160.9 138.3 132.3 159.3 158.3 |
| 5000. | 158.8 155.1 157.0 155.9 162.3 134.3 135.5 158.0 161.0 | 103.8 156.4 158.7 157.4 162.0 139.0 135.8 159 8 132.0 |
| OVERALL FPL | 168.2 174.4 175.0 174.1 173.9 148.8 147.5 179.8 179.4 | 169.9 176.3 177.1 175.8 173.6 ¹⁵¹ -3 149.3 181.6 180.7 |

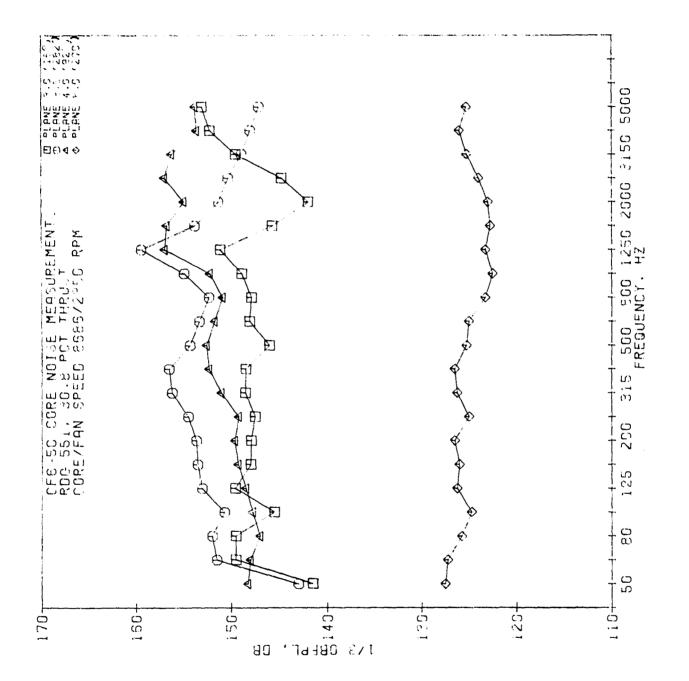


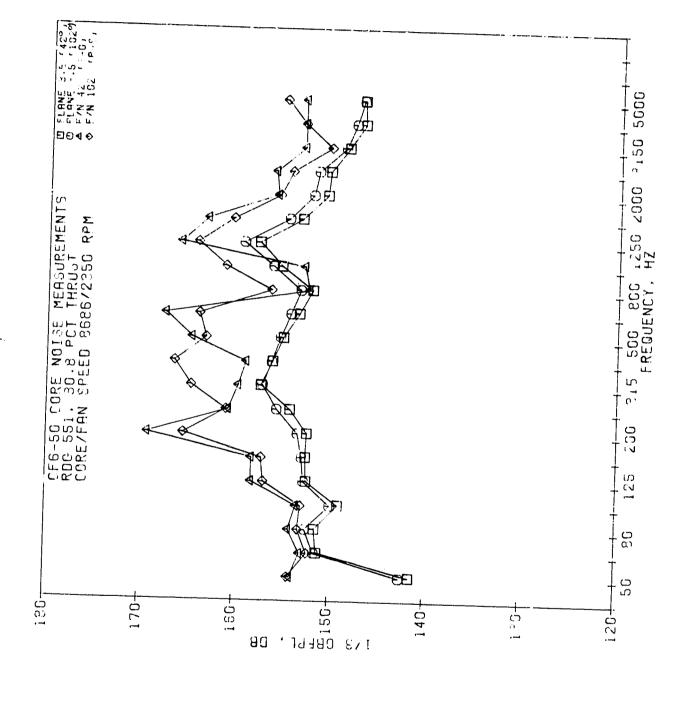




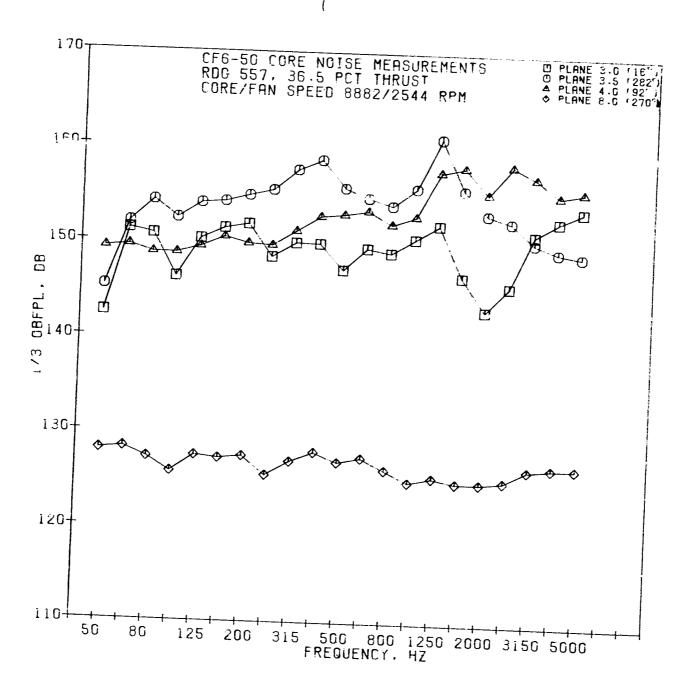


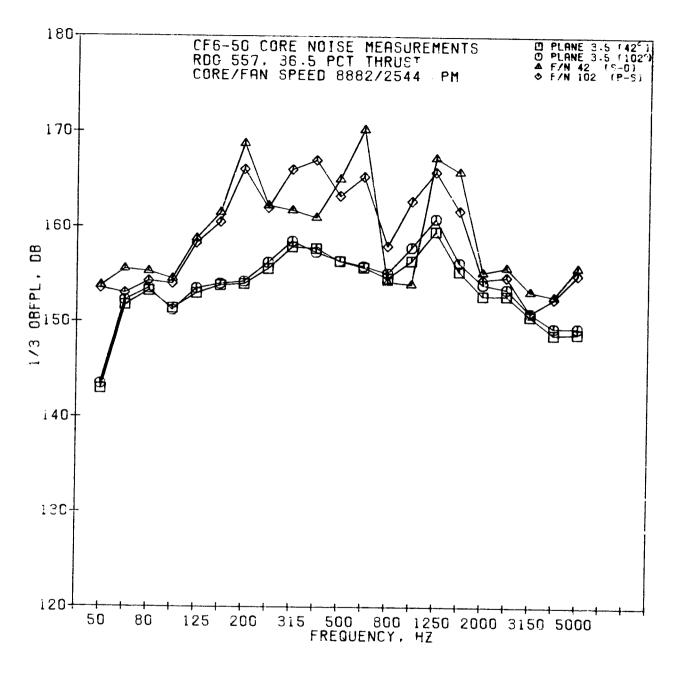


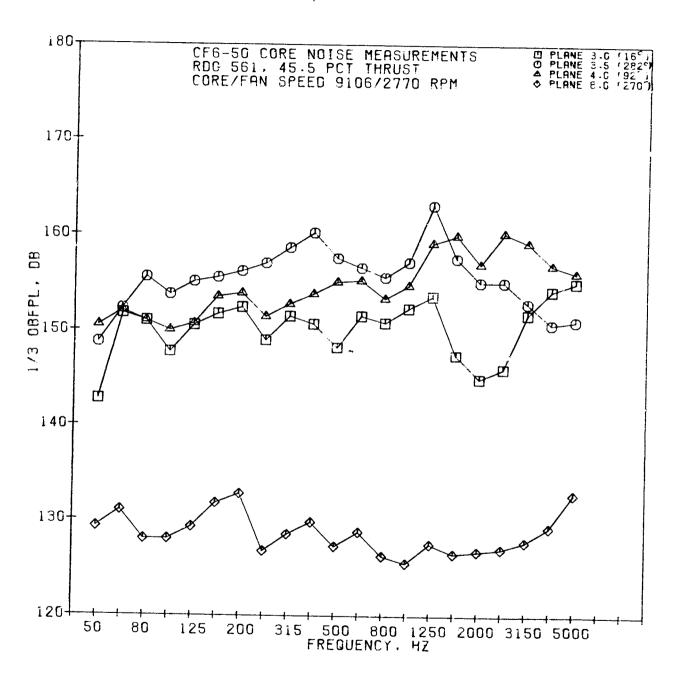


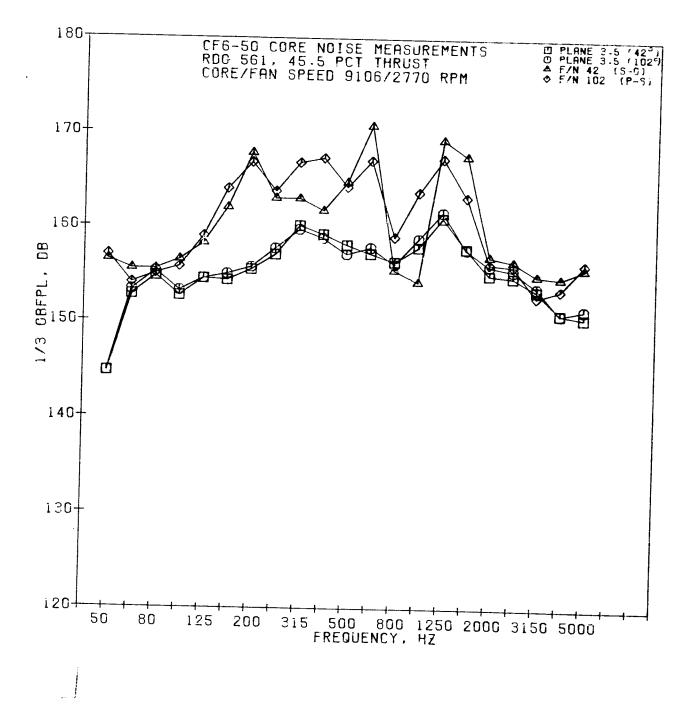


92/19/79 20794-00:



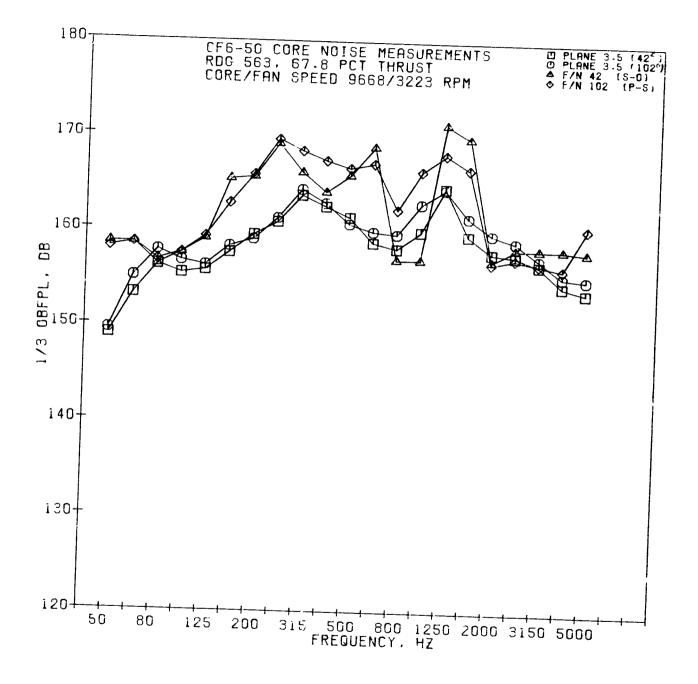


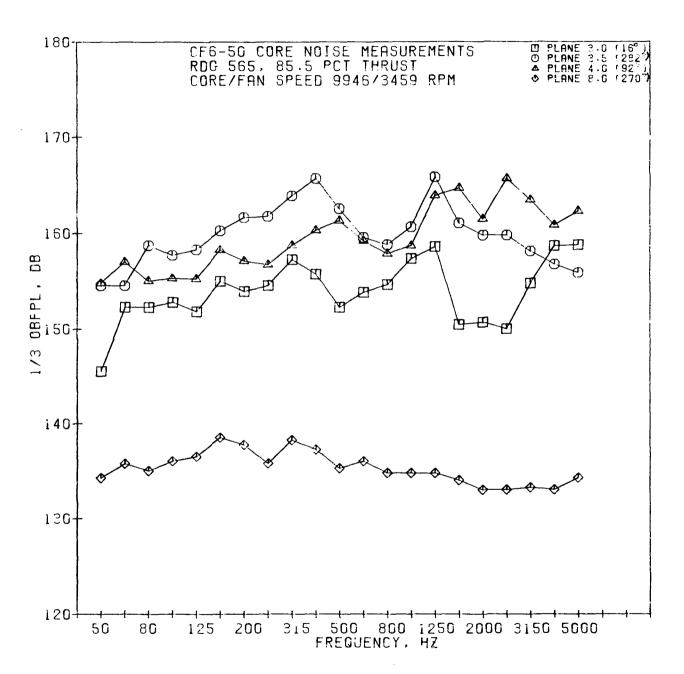


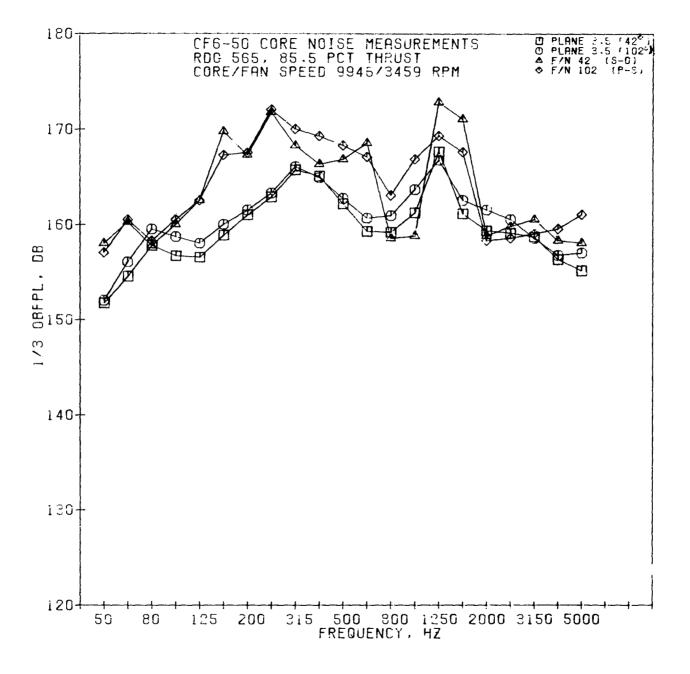


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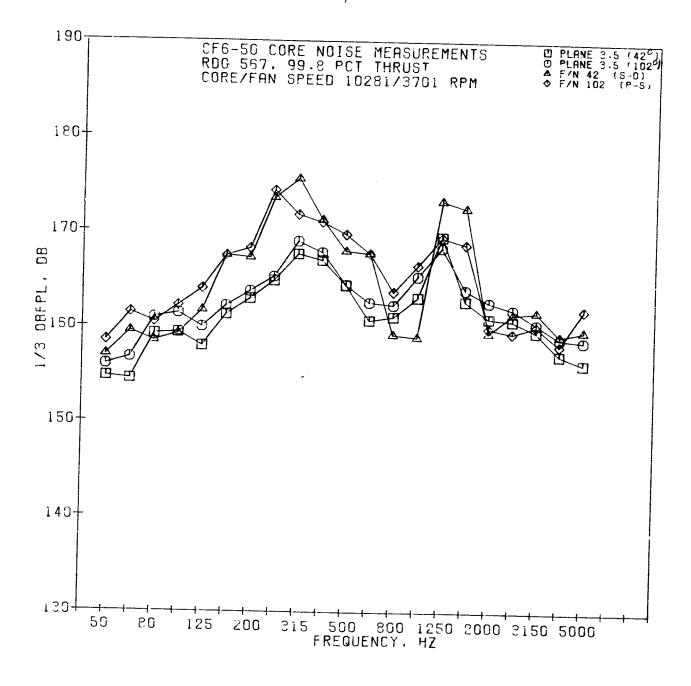
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| Table 5a. | SOUND PRESSURE LEVELS | (59, DEG, | F, 70 | PERCENT | REL. | HUM, | PAY) | |
|-----------|-----------------------|-----------|-------|---------|------|------|------|--|
| | | | | | | | | |

| | | _ | | | | | ANGLES | FROM | INLET | IN DEG | REES (| AND RA | | | | |
|-----------------|--------------|--------|--------|--------|--------|--------------|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 10. | 30. | 40. | 50. | 60. | 70. | 80. | 90. | 100. | 110. | 120. | 130. | 140. | 150. | 160. |
| F | REQ. | (0.17) | (0.52) | (0.70) | (0.87) | (1.05) | (1.22) | (1.40) | (1.57) | (1.75) | (1.92) | (2.09) | (2.27) | (2.44) | (2,62) | (2.79) |
| | 50 | 70.9 | 70.4 | 70.1 | 71.6 | 70.1 | 70.9 | 71.1 | 71.4 | 71.1 | 71.9 | 73.1 | 73.4 | 73.6 | 72.9 | 73.4 |
| NO EGA | 63 | 70.4 | 70.9 | 68.4 | 70.4 | 69. 6 | 69.6 | 70.4 | 70.6 | 70.4 | 70.1 | 71.6 | 73.1 | 73.6 | 72.1 | 72.6 |
| RADIAL 150. FT. | 80 | 69.8 | 68.3 | 67.3 | 71.8 | 69.8 | 67.6 | 67.6 | 69.1 | 68.3 | 69.3 | 71.1 | 71.8 | 73.3 | 71.8 | 70.8 |
| (46. M) | 100 | 69.6 | 69.1 | 68.4 | 71.1 | 68. 6 | 69.6 | 69,6 | 70.4 | 70.9 | 72.4 | 73.4 | 73.4 | 73.6 | 74.1 | 70.9 |
| VEHICLE CF6-50 | 125 | 68,5 | 69.8 | 67.8 | 70.5 | 70,3 | 68.0 | 68,0 | 69.5 | 70.0 | 70,3 | 71.8 | 72.5 | 72.5 | 71.8 | 69,8 |
| CONFIG E2LFCN | 160 | 67.5 | 68.5 | 67.5 | 69.2 | 66.7 | 65,0 | 66.0 | 67.5 | 67.5 | 68.0 | 70.0 | 71.7 | 71.7 | 70.0 | 67.0 |
| LOC SITE IVD | 200 | 69.8 | 69.3 | 69.1 | 69.3 | 67.3 | 66.3 | 67.3 | 68,1 | 68.8 | 69.3 | 72.1 | 73.1 | 73.6 | 72.1 | 68.1 |
| DATE 12-17-78 | 250 | 70.2 | 70.2 | 71.2 | 68.7 | 69.5 | 69.7 | 70.0 | 71.0 | 71.5 | 72,5 | 73.5 | 74.2 | 74.2 | 71.7 | 68.7 |
| RUN 150 FT GND | 315 | 70.5 | 70.7 | 71.7 | 68.7 | 69,5 | 68.5 | 69.2 | 69.7 | 70.7 | 71.7 | 73.0 | 74.5 | 73.7 | 71.7 | 67.7 |
| " RDG X05440 | 400 | 72.4 | 72.2 | 72 Q | 70 1 | 70 9 | 69.6 | 69.1 | 70.1 | 71.6 | 72.4 | 75.1 | 76.9 | 75.6 | 71.4 | 68.1 |
| BAR 28.2 HG | 500 | 75.7 | 76.7 | 76.2 | 74.7 | 72.2 | 70.5 | 70.5 | 71.0 | 72.5 | 73.5 | 76.2 | 77.7 | 77.5 | 74.2 | 70.5 |
| (95166, N/M2) | 630 | 76.5 | 76.5 | 75,0 | 71.8 | 70, 8 | 66,8 | 67.0 | 67.5 | 69.5 | 71.0 | 74.5 | 76.8 | 74.5 | 71.8 | 66.5 |
| TAMB 32. DEG F | 800 | 79,2 | 74.2 | 77.4 | 74.2 | 71.7 | 66. 9 | 67.4 | 67.2 | 66.7 | 68.7 | 72.7 | 74.2 | 72.2 | 69.2 | 65.9 |
| (273. DEG K) | 1000 | 92.7 | 83.4 | 87.4 | 80.7 | 74.4 | 71.2 | 69.7 | 68.4 | 68.2 | 68,7 | 72.7 | 72.2 | 70.4 | 69.7 | 66.9 |
| TWET 27. DEG F | 1250 | 83.2 | 75.4 | 78.2 | 72.4 | 71.7 | 66.7 | 64.7 | 64.2 | 65.9 | 66.9 | 70.2 | 71.4 | 67.7 | 64.7 | 61,9 |
| (270, DEG K) | 1600 | 79.7 | 76.2 | 76.2 | 73.4 | 72. 7 | 68.9 | 67.9 | 69.4 | 71.7 | 71.9 | 75.4 | 75.4 | 71.9 | 66,9 | 64.2 |
| HACT O. GM/M3 | 2000 | 83.6 | 79.4 | 84.1 | 76.6 | 74.4 | 70.9 | 67.9 | 67.9 | 69.4 | 71.4 | 73.9 | 74.9 | 72.1 | 66.6 | 63.6 |
| (***** KG/M3) | 2500 | 81.5 | 78.0 | 80.3 | 75.8 | 75, 5 | 69.0 | 64.5 | 64.3 | 66.0 | 68,3 | 70.5 | 73.5 | 71.4 | 66.5 | 63.3 |
| NFA 842. RPM | 3150 | 82.8 | 79.5 | 80.8 | 76.8 | 76.5 | 68.8 | 64.3 | 63.8 | 65.5 | 68.5 | 71.3 | 71.0 | 69.9 | 68.8 | 63.3 |
| (88, RAD/SEC) | 4000 | 87.2 | 83.3 | 82.0 | 82.9 | 79.7 | 74.0 | 68.4 | 67.2 | 67.1 | 70.5 | 71.5 | 72.1 | 72.5 | 75.0 | 66.6 |
| NFK 865, RPM | 50 00 | 79.7 | 77.6 | 71.1 | 71.9 | 76, 5 | 67.9 | 65.2 | 63.4 | 63.7 | 65.6 | 67,9 | 71.6 | 68.8 | 68.3 | 63.9 |
| (91, RAD/SEC) | 6300 | 72.2 | 69.2 | 73.1 | 69.6 | 77.2 | 68,2 | 62.5 | 61.7 | 64.9 | 63.7 | 66.5 | 70.0 | 69.7 | 65.7 | 64.0 |
| NFD 1. RPM | 0008 | 72.3 | 70.8 | 71.1 | 69.4 | 78.5 | 66.3 | 62.2 | 61.6 | 64.1 | 65.3 | 69.4 | 72.2 | 70.3 | 64.7 | 63.1 |
| (O, RAD/SEC)1 | 0000 | 68.3 | 66.7 | 63.9 | 65.8 | 74,9 | 65.2 | 62.3 | 60.8 | 63.0 | 63.7 | 66.3 | 69.0 | 66.8 | 63.3 | 62.8 |
| 1 | | | | | | | | | | | | | | | | |

OVERALL SPL 95.6 90.2 92.0 88.5 87.7 82.9 81.7 82.1 82.9 83.9 86.3 87.5 86.6 84.7 81.9

OF POOR C'IALTY

PROC. DATE - MONTH 2 DAY 9 HR. 15.8 FULL SCALE DATA REDUCTION PROGRAM SOUND PRESSURE LEVELS (59. DEG. F, 70 PERCENT REL. HUM. DAY) Table 5b. ANGLES FROM INLET IN DEGREES (AND RADIANS) 50. 10. 70. 80. 90. 100. 110. 120. 130. 140. 150. 160. FREQ. (0.17)(0.52)(0.70)(0.87)(1.05)(1.22)(1.40)(1.57)(1.75)(1.92)(2.09)(2.27)(2.44)(2.62)(2.79) 50 74.4 73.4 75.1 74.6 75.6 77.6 78.4 78.9 79.1 80.9 81.1 81.9 82.9 82.9 83.9 NO EGA 74.4 74.1 73.4 76.4 77.9 79.1 79.9 79.6 80.4 81.1 81.9 82.9 81.9 83.4 74.6 75.1 75.8 76.8 77.3 77.1 79.1 79.1 80.1 81.3 82.1 83.6 81.6 81.3 RADIAL 150, FT. 100 77,4 76.6 77.4 76.9 78.6 79.6 79.1 79.4 79.6 80.1 80.9 81.6 82.6 81.1 79.6 (46. M) 125 79.5 79.5 79.0 77.5 79.3 78.3 78.3 78.8 79.3 79.3 80.8 81.0 80.8 60.8 78.0 VEHICLE CF6-50 77.7 78:2 77.0 78.7 77.2 78.0 78.5 78.5 78.5 80.2 81.2 80.7 80.0 77.5 CONFIG E2LFCN 160 80.7 79.6 81.3 79.8 77.6 77.3 77.1 77.6 78.3 78.1 80.1 80.3 80.3 79.8 77.8 LOC SITE IVD 200 80.1 DATE 12-17-78 250 79.2 81.0 82:0 2 79.7 77.7 77.7 78.5 79.7 80.2 80.2 81.2 81.2 80.7 79.7 77.2 315 79.0 79.2 80.5 278.7 79.2 79.0 79.0 80.0 81.0 82.0 82.5 83.2 82.2 80.5 77.2 RUN 150 FT GND 80.1 80.6 80.6 79.6 78.9 78.9 80.4 81.1 82.4 83.9 84.4 82.4 79.1 77.1 400 78.1 RDG X05470 81.0 81.7 81.2 79.5 78.7 78.7 79.5 80.7 82.5 83.7 84.5 82.5 82.2 76.5 BAR 28.2 HG 500 79.7 630 79,5 82,0 81,3 78.8 77,5 77.5 78.8 78.8 80,5 83.3 83.8 81.8 78.3 76.0 (95166, N/M2) 800 80.9 82.4 82.2 80.2 79.4 77.9 77.2 78.7 79.2 80.7 82.4 82.9 82.4 77.2 76.2 TAMB 32. DEG F 82,2 81.9 83.4 80.4 79.9 77.9 77.2 77.9 78.4 79.7 81.4 81.7 79.9 75.4 75.7 1000 (273, DEG K) TWET 27. DEG F 1250 88,9 89.7 90.2 88.2 85.9 83.9 81.2 79.9 80.9 81.4 82.2 85.7 81.4 77.9 77.2 1600 85.2 85.2 84.9 82.9 81.4 78.7 76.9 76.7 78.4 78.9 79.9 80.2 78.4 74.9 73.9 (270, DEG K) 2000 85,9 85,6 87,1 83,1 81,1 78,6 76.6 77.4 78.1 80,6 81,1 81,1 78.4 73,9 72,9 HACT O. GM/M3 2500 97.3 94.5 95.0 89.3 89.8 84.3 80.5 79.8 81.3 82.8 84.5 85.5 83.9 78.0 76.8 (***** KG/M3) NFA 2042, RPM 3150 89.5 89.7 89.5 87.5 84.2 81.2 77.7 77.5 79.7 84.2 85.0 83.0 83.1 75.5 73.7 (214, RAD/SEC) 4000 92.1 94.0 92.0 92.9 91.1 90.2 83.1 81.4 82.3 88.5 91.2 89.0 82.5 79.7 76.0 5000 90.4 91.1 85.0 84.1 85.2 82.8 81.7 79.9 79.9 81.1 84.1 86.3 81.0 78.2 75.9 NFK 2098, RPM 85.0 86.2 91.4 87.6 88.2 86.7 78.7 (220, RAD/SEC) 6300 77.7 80.4 78.7 81.3 83.5 80.2 75.2 74.2 NFD 1. RPM 8000 86.8 87.5 89.6 87.2 86.5 84.8 77.0 75.3 77.8 79.1 80.4 80.4 77.3 D. RAD/SEC)10000 83.6 85.0 81.2 84.3 80.2 78.3 75.1 75.1 76.6 79.5 81.3 80.8 76.6 73.1 70.1 OVERALL SPL 101.0 100.7 100.7 98.5 97.6 95.8 92.6 92.7 93.5 95.4 97.1 97.2 95.2 93.0 91.7

| FULL SC | ALE DAT | TA REDU | ICTION | PROGRA! | M | | | | | PROC | . DATE | - MON | TH 2 | DAY 9 | Ha. 1 | 5 ,3 |
|-----------------|---------|---------|--------|---------|--------|--------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|-------------|
| | | | | Table | 5c. | SOUND | PRESSU | RE LEV | ELS (5 | 9, DEG | . F, 7 | O PERC | ENT RE | L. HUM | . BAY) | |
| I | | | | | | | ANGLES | FROM | INLET | IN DEG | REES (| AND RA | DIANS) | | | |
| | | 10. | 30, | 40. | 50. | 60. | 70. | 80. | 90. | 100. | 110. | 120. | 130. | 140. | 150. | 160. |
| | FREQ. | (0, 17) | (0.52) | (0.70) | (0.87) | (1.05) | (1.22) | (1.40) | (1.57) | (1.75) | (1.92) | (2.09) | (2.27) | (2.44) | (2.62) | (2.79) |
| į. | 50 | 75.4 | 73.9 | 76.1 | 73.4 | 77.1 | 78,4 | 79.1 | 80.4 | 80.9 | 81.6 | 83.4 | 84.1 | 85.4 | 86.4 | 88.1 |
| NO EGA | 63 | 77.1_ | 75.6 | 75.6 | 74.0 | 77.6 | 79.1 | 81.1 | 81.6 | 81.9 | 82.4 | 83.9 | 85.6 | 86.4 | 85.9 | 87.4 |
| RADIAL 150, FT. | 80 | 78.3 | 76.8 | 77.1 | 78.3 | 78.8 | 79.6 | 8 | 82.8 | 82.8 | 83.1 | 84.8 | 85.6 | 86.8 | 85.1 | 86.1 |
| (46. M) | 100 | 79.6 | 78.1 | 79.4 | 79.1 | 81.4 | 81.6 | 81.9 | 82.6 | 81.6 | 82.9 | 84.1 | 85.1 | 86.1 | 85.1 | 83.6 |
| VEHICLE CF6-30 | 125 | 83.3 | 81.8 | 81.5 | 79.5 | 81.3 | 81.0 | 81.0 | 82.0 | 82.3 | 83,0 | 84.3 | 84.8 | 84.3 | 84.8 | 81.5 |
| CONFIG E2LFCN | 160 | 83.7_ | 81.2 | 81.2 | 80.2 | 81.5 | 79.5 | 81.2 | 81.7 | 81.5 | 82.5 | 83.7 | 84.5 | 84.7 | 83.7 | 81.5 |
| LOC SITE IVD | 200 | 82.8 | 82.8 | 83.3 | 82.6 | 80.6 | 80.3 | 80.3 | 80.8 | 81.3 | 81.1 | 83.3 | 83.3 | 83.6 | 82.8 | 81.3 |
| DATE 12-17-78 | 250 | 81.2 | 82.5 | 82.7 | 81.5 | 80.2 | 80.2 | 80.7 | 81.7 | 81.5 | 81.5 | 83.2 | 84.2 | 83,5 | 82.5 | 80.2 |
| RUN 150 FT GND | 315 | 80.5 | 80.7 | 82.2 | 81.2 | 81.7 | 81.2 | 81.2 | 82.2 | 82.2 | 83.7 | 84.5 | 85.5 | 84.0 | 82.7 | 79.5 |
| RDG YOFEIO | 100 | 70 0 | 87 1 | 300 | 82.9 | 82.4 | 81.1 | 81 4 | 82 4 | 83.4 | 93.9 | 85.4 | 86.1 | 83.9 | 81.4 | 79.9 |
| BAR 28.2 HG | 500 | 81.7 | 83.2 | 84.0 | 83.0 | 81.5 | 80.5 | 80.7 | 82.2 | 82.7 | 84.0 | 86.0 | 86.2 | 83.5 | 80.7 | 79.2 |
| (95166. N/M2) | 630 | 81.5 | 84.8 | 84.3 | 83,3 | 81.3 | 80,3 | 79.8 | 81.0 | 81.5 | 82.3 | 84.8 | 85,8 | 83.8 | 80.8 | 79.0 |
| TAMB 32. DEG F | 800 | 82.2 | 84.2 | 84.2 | 82.7 | 81.4 | 80.2 | 79.7 | 80.7 | 80.9 | 82.4 | 84.4 | 85.2 | 83.2 | 79.9 | 78.9 |
| (273. DEG K) | 1000 | 83.2 | 83.9 | 84.9 | 82.9 | 81.9 | 80.7 | 79.7 | 80.2 | 80.7 | 81.7 | 83.4 | 83.9 | 81.2 | 78.7 | 77.4 |
| TWET 27. DEG F | 1250 | 88.2 | 88.2 | 87.7 | 86.7 | 84.9 | 83.9 | 81.4 | 80.9 | 81.4 | 81.7 | 83.4 | 84.9 | 81.4 | 79.2 | 77.7 |
| (270. DEG K) | 1600 | 90.4 | 91.7 | 91.7 | 90.4 | 88.4 | 86.9 | 83.7 | 82.7 | 83.2 | 82,9 | 84.9 | 87.4 | 82.7 | 80.4 | 78.7 |
| ∥ HACT O. GM/M3 | 5000 | 87.1 | 86.9 | 88.9 | 85.6 | 83.1 | 81.6 | 79.6 | 79.9 | 80.6 | 83,1 | 83.4 | 83.4 | 80.6 | 77.6 | 75.6 |
| (***** KG/M3) | 2500 | 92.5 | 91.0 | 92.3 | 89.0 | 86,3 | 84.0 | 80.8 | 81.0 | 82.5 | 84.3 | 85.3 | 86.3 | 82.7 | 78.5 | 77.0 |
| NFA 2289, RPM | 3150 | 97.5 | 95.0 | 96.0 | 94.5 | 88.5 | 86.3 | 82.3 | 81.3 | 82.5 | 87.3 | 88.€ | 87.5 | 84.2 | 81.0 | 77.5 |
| 240. RAD/SEC | | 94.2 | 98.8 | 92.0 | 93.4 | 89.7 | 87.3 | 84.2 | 83.7 | 83.1 | 88.5 | 90.5 | 88.8 | 82.0 | 82.3 | 77.8 |
| NFK 2352, RPM | 5000 | 92.0 | 94.6 | 87. E | 89.4 | 88.3 | 87.6 | 84.7 | 84.2 | 83.7 | 86,6 | 87.6 | 90.3 | 83.6 | 83.8 | 78.4 |
| (246. RAD/SEC | | 85.7 | 89.4 | 93,4 | 90.1 | 91.0 | 91.2 | 85.0 | 84.0 | 84.4 | 85.7 | 85.0 | 87.8 | 83.5 | 83.5 | 78.0 |
| NFD 1. RPM | 8000 | 89.3 | 91.7 | 92.3 | 90.9 | 88.7 | 87.7 | 80.7 | 81.8 | 79.8 | 86.8 | 83.1 | 86.1 | 79.7 | 84.4 | 74.1 |
| (O. RAD/SEC |)10000 | 86.2 | 89.2 | 84.1 | 87.7 | 82,1 | 84. 2 | 78.0 | 80.7 | 78.5 | 86.4 | 83.5 | 86.2 | 78.2 | 83.7 | 72.8 |

OVERALL SPL 102.5 103.6 102.4 101.3 98.9 98.0 95.4 95.7 95.9 98.1 99.1 99.9 97.5 96.7 95.2

FULL SCALE DATA REDUCTION PROGRAM PROC. DATE - MONTH 2 DAY 9 HR. 15.8 SOUND PRESSURE LEVELS (59. DEG. F, 70 PERCENT REL. HUM. DAY) Table 5d. ANGLES FROM INLET IN DEGREES (AND RADIANS) 50. 90, 100, 110, 120, 130, 70. 80. FREQ. (0,17)(0,52)(0,70)(0,87)(1,05)(1,22)(1,40)(1,57)(1,75)(1,92)(2,09)(2,27)(2,44)(2,62)(2,79) 50 75.9 75.4 77.1 77.4 78.1 79.6 80.1 81.1 81.9 83.4 84.9 85.9 87.4 89.1 90.9 77.6 77.1 81.9 85.1 87.1 NO EGA 77.4 79.4 80.4 82.9 82.9 83.6 88.1 78.3 79.1 80.1 84.1 86.1 87.6 89.1 RADIAL 150, FT. 80 79.8 81.3 81.8 81.6 94.6 85.1 (46, M) 100 81.9 80.4 80,9 81,1 82.9 83,6 83.6 83.9 83.6 84.9 86.1 87.4 89.1 87.9 VEHICLE CF6-50 125 85.0 83.5 83.3 82.0 84.0 83.8 82.5 84.0 84.0 84.8 85.8 87.0 87.0 87.8 84.5 150 84.2 83.7 82.0 83.7 82.7 82.7 83.5 83.7 84.2 86.2 86.7 87.2 87.0 CONFIG EZLICH 86.0 LOC SITE IVD 500 84.6 84.8 85.3 83,8 82.3 82.8 82.3 82.8 83.1 83.3 85.6 85.8 86.3 250 83,7 83,7 83,0 82.5 82.7 82.2 83.7 83.5 83.5 84.7 85.5 85.7 85.0 82.7 DATE 12-18-78 81.7 RUN 150 FT GND 315 82.0 84.0 85.0 85.0 84.2 83.7 85.2 84.5 84.2 85.0 86.0 87.2 86.0 84.0 82.0 RDG XC BAR 28.2 HG 85.9 86.6 85.4 83.6 84.4 84.9 85.4 86.9 86.1 X05570 400 82.1 84.9 84.1 87.6 500 83.5 85.7 85.5 85.5 84.0 83.0 82.5 83.5 84.0 85.2 87.2 87.2 85.5 86.3 85.8 85.5 84.0 82.5 81.8 82.8 82.8 84.3 86.5 86.8 85.C (95166, N/M2) 630 83.0 85.9 86.4 84.9 82.4 82.4 82.9 82.7 84.4 85.9 86.9 82.4 TAMB 31. DEG F 003 84.2 84.2 (273. DEG K) 1000 34.4 85.2 86.7 84.4 83.9 82.7 81.7 82.4 82.4 83,4 85.4 85.7 TWET 27, DEG F 1250 87.7 87.4 87.7 85.2 84.4 83.9 82.4 81.9 82.9 82.9 84.4 85.4 83.2 80.7 79.7 (270, DEG K) 82.2 81.2 1600 94.4 94.7 94.4 92.7 90.7 89.7 87.2 86.4 86.2 85.9 87.2 90.2 85.7 HACT O. GM/M3 2000 88.8 88.1 90.3 86.6 85.3 83.1 81.6 82.3 82.3 84.1 85.1 84.8 82.1 79.1 77.6 79.8 78.5 (***** KG/M3) 2500 91.8 91.0 91.8 88.0 87.0 84.8 82.0 82.5 83.5 85,8 86.0 86.8 83.9 83.0 84.5 89.2 90.2 89.0 85.1 80.7 79.2 NFA 2476, RPM 3150 104.5 97,2 97.5 **95**.5 91.0 87.5 83.5 82.9 84.0 88.5 89.5 88.0 81.5 79.5 76.8 (259, RAD/SEC) 4000 95,2 89.7 87.1 84.2 82.4 94.1 88.6 89.9 87.9 86.9 88.1 91.6 93.3 86.3 84.2 81.6 5000 98.3 90.8 91.9 93.2 90.**8** NFK 2545, RPM 97.2 (266, RAD/SEC) 6300 90.2 91.4 96.8 94.1 94.9 93.9 88.7 84.7 87.1 84.4 87.2 88.7 84.9 80.7 80.7 8000 91.5 92.5 94.3 91.6 89.9 88.0 83.4 81.3 82.3 64.0 85.1 84.6 81.2 77.2 74.6 1. RPM O. RAD/SEC)10000 88.5 90.0 86.4 89.0 84.7 84.2 80.8 79.0 79.5 83.4 85.0 84.3 78.8 75.8 72.8 OVERALL SPL 106.8 104.5 104.0 102.3 101.3 99.8 97.8 97.4 97.7 99.0 100.6 101.4 99.5 98.4 98.0 OF POOR PAGE 7

.

12.00

| 1 | | | | | | | ANGLES | FROM | INLET | IN DEG | REES (| AND RA | DIANS) | | | |
|-----------------|--------|--------------|--------|----------------------|--------|------------------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|
| | | 10. | 30. | 40. | 50. | 60. | 70. | 80. | 90. | 100. | 110. | 120. | 130. | 140. | 150. | 160. |
| 1 | FREQ. | (0.17) | (0.52) | (0.70) | (0.87) | (1.05) | (1.22) | (1.40) | (1.57) | (1.75) | (1.92) | (2.09) | (2.27) | (2,44) | (2.62) | (2, 79) |
| 1 | 50 | デ フ、1 | 76.1 | 77.9 | 78.4 | 79.6 | 81.4 | 82.4 | 83.4 | 84.1 | 85.6 | 86.6 | 88.4 | 90.6 | 93.4 | 95.9 |
| NO EGA | 63 | 79.6 | 78.6 | 78.4 | 78.1 | 80,6 | 81.6 | 83,4 | 84.4 | 84.9 | 85,4 | 87.4 | 89.4 | 91,6 | 92.4 | 94.6 |
| RADIAL 150. FT. | 80 | 82.1 | 79.8 | 80.8 | 82.1 | 83.1 | 83.3 | 83.8 | 86,1 | 86.1 | 87.3 | 88.8 | 90.3 | 92.8 | 92.1 | 93.3 |
| (46, M) | 100 | 83,9 | 81.9 | 83.4 | 83,4 | 84.9 | 85.1 | 85.4 | 86.1 | 86.1 | 87,4 | 88.4 | 89,9 | 92.1 | 91.6 | 91.4 |
| VEHICLE CF6-50 | 125 | 86.0 | 85,3 | 8 5, 5 | 64.3 | 85.5 | 85.0 | 85.3 | 87.0 | 86.8 | 87.5 | 89.3 | 90.0 | 91.0 | 91.5 | 88.5 |
| CONFIG E2LFCN | 160 | 88.4 | 86 2 | 85.9 | 84.4 | 85,9 | 84.9 | 85.9 | 86.4 | 86.4 | 87.9 | 88.9 | 90.2 | 90.9 | 90.9 | 87.7 |
| LOC SITE IVD | 200 | 86.8 | 87.1 | 87.1 | 86.1 | 84.8 | 85.1 | 84.3 | 85.6 | 86.3 | 86.3 | 88.6 | 89.3 | 89.8 | 89.1 | 86.8 |
| DATE 12-18-78 | 250 | 82.0 | 84.2 | 85,2 | 85.0 | 9 4.7 | 84.5 | 84.2 | 86.7 | 86.2 | 86,2 | 87.7 | 89.0 | 89.0 | 88.0 | 85.7 |
| RUN 150 FT GND | 315 | 82.7 | 83.7 | 86.2 | 85.2 | 85.7 | 85.2 | 85.2 | 86.2 | 86.2 | 87.2 | 88.0 | 89.0 | 88.7 | 87.5 | 84.7 |
| RDG X05610 | 195 | 84.9 | 86.6 | 87.3 | 87.9 | 86.9 | 85. õ | 85.9 | 86.6 | 86,9 | 87 🥱 | 22.1 | 30.9 | 88.0 | 35.9 | 35.1 |
| BAR ZB.Z HG | 500 | 84.5 | 87.5 | 87.5 | 87.2 | 86.0 | 85.2 | 85.5 | 86.2 | 86.5 | 87.2 | 89.0 | 88.7 | 87.7 | 85.7 | 84.2 |
| (95166, N/M2) | 630 | 84.3 | 86.8 | 87.0 | 87.0 | 85,3 | 84.5 | 84.3 | 85,5 | 85.5 | 86.3 | 88.0 | 88.8 | 86.8 | 85.3 | 83.8 |
| TAMB 31, DEG F | 800 | 85,2 | 87.2 | 87.9 | 87.4 | 85,7 | 84.9 | 84.7 | 84.9 | 85.7 | 86.7 | 88.2 | 88,9 | 87.2 | 84.9 | 83.7 |
| (272, DEG K) | 1,000 | 84.9 | 88.0 | CT 7 | ₽.C 7 | 30 3 | 24.5 | 34,4 | 84.9 | 85.4 | 85.9 | 87.7 | 87.7 | 85.4 | 83.4 | 82.2 |
| TWET 27. DEG F | 1250 | €7.4 | 88.4 | 89.1 | 87.4 | 86.6 | 86.1 | 85.9 | 85.4 | 85.6 | 85.4 | 86.6 | 87.6 | 85.9 | 83.4 | 82.9 |
| (270. DEG K) | 1600 | 96.1 | 97.1 | 95.6 | 96.6 | 95,6 | 92.1 | 89.6 | 89.1 | 89.1 | 89,6 | 90.1 | 91.6 | 87.6 | 85.1 | 84.4 |
| HACT O. GM/M3 | 2000 | 91.3 | 91,8 | 92.8 | 91.0 | 90 0 | 87.3 | 86,3 | 86.8 | 86.3 | 87.8 | 88.0 | 88.0 | 86.0 | 82.5 | 81.5 |
| (**** KG/M3) | 2500 | 90.4 | 90.2 | 93 2 | 89.9 | 89.2 | 86.4 | 85.4 | 85.9 | 86.9 | 87.9 | 88.2 | 88.4 | 86.3 | 81.9 | 81.2 |
| NFA 2694, RPM | 3150 | 96.9 | 95.4 | 95.1 | 94.1 | 91.1 | 87.9 | 86.1 | 85.6 | 86.9 | 90.6 | 93.6 | 91.1 | 85.8 | 82.1 | 80.9 |
| (282 RAD/SEC | 1 4000 | 94.5 | 94.6 | 90.1 | 88.7 | 86,5 | 84.3 | 84.0 | 85.5 | 85.6 | 89,8 | 90.8 | 88.9 | 83.3 | 81.1 | 78.9 |
| NFK 2771. RPM | 5000 | 97.0 | 97.4 | 91.8 | 91.4 | 91.8 | 90.9 | 91.2 | 90.7 | 91.7 | 93.4 | 95.4 | 96.3 | 90.1 | 87.5 | 85.9 |
| (290. RAD/SEC | 6300 | 92.0 | 92.0 | 98.4 | 94.9 | 94.5 | 93.5 | 90.3 | 88.5 | 92.5 | 90.0 | 92.6 | 93.1 | 89.8 | 85.0 | 84.0 |
| NFD 1. RPM | 8000 | 91.7 | 92.9 | 94.8 | 93.1 | 90.9 | 89.2 | 86.6 | 85.2 | 86.5 | 88.0 | 89.5 | 88.6 | 86.2 | 81.9 | 79.5 |
| (0. RAD/SEC | 000010 | 89.1 | 90.3 | 87.5 | 89.4 | 85,3 | 85.1 | 84.2 | 83.1 | 84.4 | 87,8 | 88.9 | 87.6 | 81.6 | 79.4 | 76.2 |
| H | | | | | | | | | | | | | | | | |

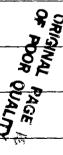
OVERALL SPL 104.4 104.7 104.9 103.6 102.6 101.0 100.0 100.2 101.0 102.0 103.6 104.0 102.7 101.9 102.0

FULL SCALE DATA REDUCTION PROGRAM PROC. DATE - MONTH 2 DAY 9 HR. 15.8 SMUND PRESSURE LEVELS (59. DEG. F, 70 PERCENT REL. HUM. DAY) Table 5f. ANGLES FROM INLET IN DEGREES (AND RADIANS) 50. 90, 100, 110, 120, 130, 140, 150, 160, 40. 60. 70. 80. FREG. (0,17)(0.52)(0,70)(0,87)(1,05)(1,22)(1,40)(1,57)(1,75)(1,92)(2,09)(2,27)(2,44)(2,62)(2,79) 50 80.9 79.6 81.1 81.9 82.1 84.6 85.9 87.1 88.4 89.9 92.4 95.1 98.9 102.9 106.4 84.1 85.1 86.9 88.6 89.4 90,9 93.1 96.1 99.4 102.1 105.6 NO EGA 63 83,9 82.6 82.6 81.9 RADIAL 150. FT. 84.3 35 1 85.6 86.8 87.3 87.6 90.3 90.6 92,3 94.3 96.8 100,6 101.6 104.1 85.8 86.9 87.9 87.1 88.1 88.6 89.1 90.4 90.9 92.9 94.6 96.9 100.4 101.1 102.1 (46. M) 109 38.1 VEH! CLE 89.8 91.5 92.0 93.8 95.5 97.8 99.8 101.3 99.0 CF6-50 125 92.0 90.0 90.5 88.5 89.3 89.5 CONF!G ESLFCN 160 91 9 92.2 88.7 90.9 90.2 90.9 91.4 92.2 93.4 95.7 97.7 99.9 100.2 97.2 LOC SITE IVD 6.63 89.3 89.1 88,6 90.1 90.6 91.1 92.1 92.6 95.1 97.1 98.6 98.1 95.3 DATE 12-18-78 87.0 88.5 88.5 88.7 89,2 89,5 91,2 91,5 92,5 94,7 96,5 97,0 96,2 93,5 150 FT GND 315 88.0 89.0 91.2 90.5 90.7 90.2 89.7 91.2 91.7 92.7 94.0 96.0 96.2 95.0 92.0 RUN 90.6 90.6 91.9 91.9 92.6 94.9 95.9 96.1 93.9 91.6 X05630 400 90.1 91.1 91.9 92,9 92.1 RDG BAR 28.2 HG 93,2 91,2 92,5 92,5 92.0 94,2 95,2 94.7 93,0 90,5 500 89.2 92.7 92.5 92.7 93.5 87.5 92.0 91.5 92.3 91.3 90.8 91.0 90.3 90.5 91.8 93.8 94.3 93.5 92.0 90.8 (95166 N/M2) 630 87.6 92.1 91.6 91.4 90.6 89.9 89.1 90.1 90.9 91.4 93.1 93.9 92.9 90.9 89.4 TAMB 30. DEG F 800 1000 87.9 90.9 91.4 90.9 91.1 90.1 89.4 90.4 90.9 91.4 92.4 92.9 92.1 89.9 88.1 (272 DEG K) 90.6 91.4 93.6 92.1 92.1 92.1 90.9 90.9 91.4 90.9 92.4 92.9 92.4 89.9 88.1 TWET 27. DEG F 1250 1600 92.3 93.6 94.8 93.3 92.6 92.3 90.6 91.1 92.3 90.8 91.8 92.8 91.8 89.3 87.6 (270. DEG K) 2000 103.2 101.2 103.0 100.0 97.7 96.5 94.5 94.2 95.0 95.5 97.7 95.5 93.2 90.0 88.5 HACT O. GM/M3 (***** KG/M3) 2500 92.8 93.6 97.1 95.3 95.1 93,6 91,8 91,8 92,6 92,6 93,1 92.3 92.0 88.1 87.1 94.7 95.2 95.5 93.2 92.0 90.5 90.2 91.5 94.0 94.0 90.7 89.1 86.0 84.5 3150 NFA 3133, RPM 94.0 (328. RAD/SEC) 4000 100.8 99.2 98.4 94.8 92.3 90.4 90.1 90.3 91.7 95.7 98.9 96.0 89.4 87.4 83.7 5000 95.8 95.2 93.4 89.5 90.6 90.5 91.8 92.8 93.8 91.7 93.0 92.9 87.7 86.6 84.8 NFK 3224, RPM (338. RAD/SEC) 5300 92 4 \$1.8 \$8.0 \$3.5 \$4.6 \$4.3 \$1.9 \$3.1 \$6.3 \$3.9 \$6.4 \$5.2 \$2.9 87.6 87.4 8000 93.9 93.1 94.9 93.0 91.5 90.3 88.5 91.6 93.4 94.9 95.7 93.2 90.3 86.8 83.9 NED T. RPM (0, RAD/SEC)10000 89.8 90.3 87.8 89.8 86.0 86.3 85.7 87.1 88.6 91.0 92.6 90.6 86.9 84.1 80.7 107,7 107.1 108.3 106.3 105.6 104.9 104.1 105.0 105.9 106.6 108.5 109.0 110.0 110.6 111.8 OVERALL SPL

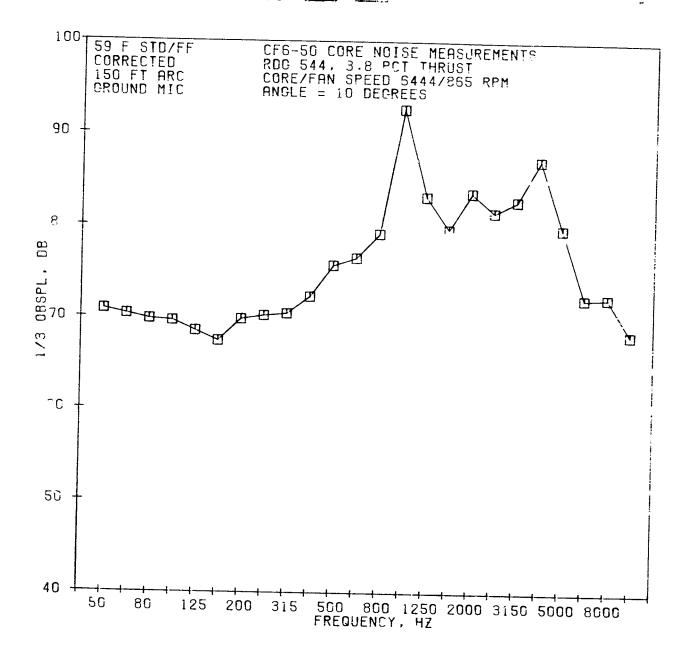
| 11 | | | | | | | ANGLES | FROM | INLET | IN DEG | REES (| AND RA | DIANS) | | | |
|-----------------|-------|---------------|--------|--------|--------|--------|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 10. | 30. | 10. | 50. | 60. | 70. | 80. | 90. | 100. | 110. | 120. | 130. | 140. | 150. | 160. |
| | FREQ. | (0.17) | (0.52) | (0.70) | (0.87) | (1.05) | (1.22) | (1.40) | (1.57) | (1.75) | (1.92) | (2.09) | (2.27) | (2.44) | (2.62) | (2,79) |
| 1) | 50 | 82.9 | 81.9 | 83.1 | 83.9 | 84.6 | 86.4 | 87.6 | 88.9 | 90.6 | 92.6 | 94.4 | 97.1 | 102.4 | 107.4 | 111.1 |
| NO EGA | 63 | 86.4 | 84.6 | 84.9 | 83.9 | 86.6 | 87.4 | 89.1 | 90.6 | 91.4 | 93.4 | 95.9 | 99.1 | 103.4 | 106.6 | 111.1 |
| RADIAL 150. FT. | 80 | 88.6 | 86.1 | 87.3 | 88.3 | 88.8 | 89.3 | 90.1 | 92.6 | 93.1 | 95.3 | 97.3 | 100.6 | 104.8 | 106.6 | 109.8 |
| (46. M) | 100 | 90.6 | 89.6 | 90.4 | 89.4 | 90.1 | 90.1 | 91.6 | 92.6 | 93.6 | 95.4 | 97.4 | 101.1 | 105.1 | 106.6 | 107.4 |
| VEHICLE CF6-50 | 125 | 94.0 | 92.8 | 93.3 | 90.8 | 91.5 | 91.8 | 91.8 | 94.0 | 94.5 | 96.8 | 99.0 | 102.3 | 104.0 | 107.0 | 104.8 |
| CONFIG E2LFCN | 160 | 92.2 | 92.7 | 92.7 | 90.9 | 92.4 | 92.7 | 93.2 | 94.4 | 95.7 | 96.4 | 99.2 | 102.2 | 104.2 | 105.4 | 102,7 |
| LOC SITE IVD | 200 | 88.3 | 90.3 | 92.8 | 92.3 | 91.6 | 93.1 | 93.1 | 93.8 | 95.1 | 95.6 | 98.8 | 101.1 | 103.1 | 102.8 | 100.8 |
| DATE 12-18-78 | 250 | 88.0 | 89.7 | 92.0 | 92.0 | 91.7 | 92.2 | 32.2 | 94.0 | 94.2 | 95.7 | 97.7 | 100.0 | 101.5 | 101.0 | 98.0 |
| RUN 150 FT GND | 315 | 91.0 | 92.2 | 94.2 | 94.0 | 95.0 | 92.7 | 92.7 | 93.7 | 94.5 | 95.7 | 97.5 | 99.5 | 100.0 | 99.0 | 96.0 |
| RDG x05650 | 400 | 91.4 | 93.4 | 93.9 | 95.1 | 94.9 | 92. 9 | 92.9 | 93.9 | 94.6 | 96.1 | 98.1 | 99.4 | 99.9 | 97.6 | 95.1 |
| BAR 28.2 HG | 500 | 90.5 | 94.6 | 95.0 | 95.2 | 94.2 | 23.0 | 92.7 | 93.7 | 94.5 | 95.5 | 97.2 | 98.0 | 98.2 | \$6.0 | 94.0 |
| (95166, N/M2) | 630 | 89.5 | 93.0 | 94.5 | 94.3 | 93.3 | 92.0 | 92.3 | 92.5 | 93.0 | 94.3 | 96.0 | 97.3 | 96.8 | 95,3 | 92.8 |
| TAMB 30. DEG F | 800 | 90.7 | 93.4 | 94.7 | 94.4 | 93.4 | 92.4 | 92.2 | 93.2 | 93.7 | 94.4 | 95.9 | 96.9 | 96.7 | 94.2 | 92.2 |
| (272. DEG K) | 1000 | 89.2 | 92.4 | 94.4 | 92.9 | 93.2 | 92.9 | 92.2 | 92.7 | 93.4 | 93.7 | 95.9 | 95.7 | 95.2 | 92.9 | 91.4 |
| BINEL EU. DET | | | ₫3.2 | 94 9 | 97.7 | 93.9 | 93.9 | 93,2 | 92.9 | 93.4 | 93.7 | 95.4 | 95.4 | 95.7 | 92.7 | 91,4 |
| (273. DEG K) | 1600 | 91.9 | 94.4 | 97.2 | 95.7 | 95.7 | 94.7 | 93.4 | 93.9 | 94.7 | 93.7 | 94.4 | 95.4 | 95.2 | 92.7 | 91.2 |
| HACT O. GM/M3 | 2000 | 100.1 | 99,6 | 102.6 | 100.1 | 98.4 | 97.1 | 95.9 | 96.4 | 96.1 | 97.4 | 98.9 | 96.6 | 95.6 | 91.9 | 90.9 |
| (***** KG/M3) | 2500 | 95 , 5 | 37.5 | 100.8 | 98.3 | 98.5 | 96.5 | 96.0 | 95.3 | 95.8 | 96.0 | 96.5 | 96.3 | 95.2 | 91.3 | 90.0 |
| NFA 3363. RPM | 3150 | 93.5 | 95.5 | 97.0 | 96.2 | 95.5 | 93.7 | 92.7 | 92.7 | 93.5 | 95.7 | 95.5 | 92.7 | 91.9 | 89.5 | 87.7 |
| (352, RAD/SEC | 4000 | 97.4 | 97.7 | 94.0 | 93.4 | 91.6 | 91.0 | 91.4 | 91.9 | 93.0 | 96.2 | 96.2 | 93.8 | 89.7 | 89.5 | 85.5 |
| NFK 3461. RPM | 5000 | 94.7 | 95.1 | 89.3 | 89.4 | 91.2 | 91.6 | 94.4 | 94.4 | 93.9 | 92.6 | 93.6 | 94.3 | 90.8 | 90.2 | 86.9 |
| (362. RAD/SEC | 6300 | 89.4 | 90.8 | 96.0 | 92.5 | 93.9 | 93.8 | 92.1 | 93.4 | 96.8 | 94,9 | 95.7 | 94.7 | 92.9 | 89.9 | 87.4 |
| NFD 1. RPM | 8000 | 89.4 | 90.6 | 93.0 | 91.0 | 90.1 | 88.9 | 88.1 | 89.4 | 91.2 | 92.9 | 93.2 | 91.5 | 90.4 | 89.1 | 83.7 |
| (O. RAD/SEC | 10000 | 86.1 | 88.3 | 85.5 | 88.1 | 85.2 | 85.8 | 85.9 | 87.6 | 83.6 | 92.0 | 92.3 | 90.6 | 87.1 | 88.1 | 81.4 |

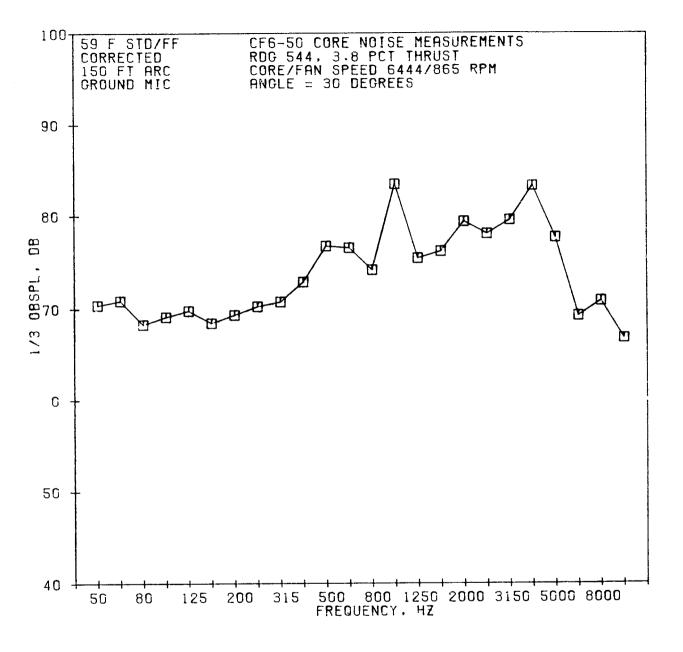
OVERALL SPL

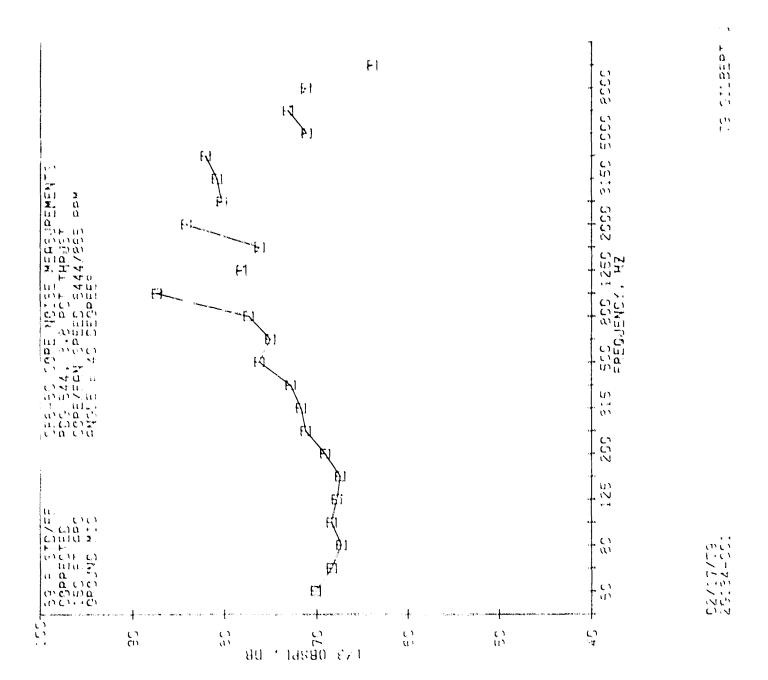
196.4 107.4 109.0 107.7 107.3 106.5 106.3 107.0 107.8 108.9 110.5 112.0 113.9 115.4 117.0

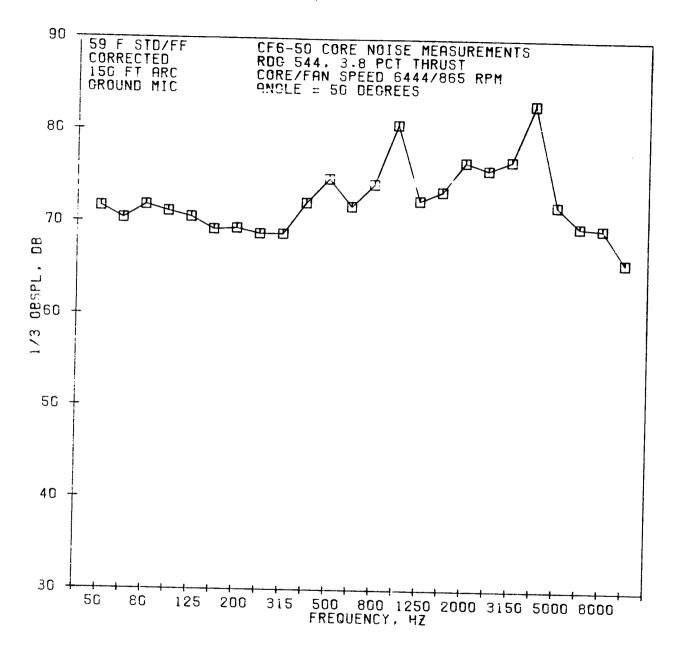


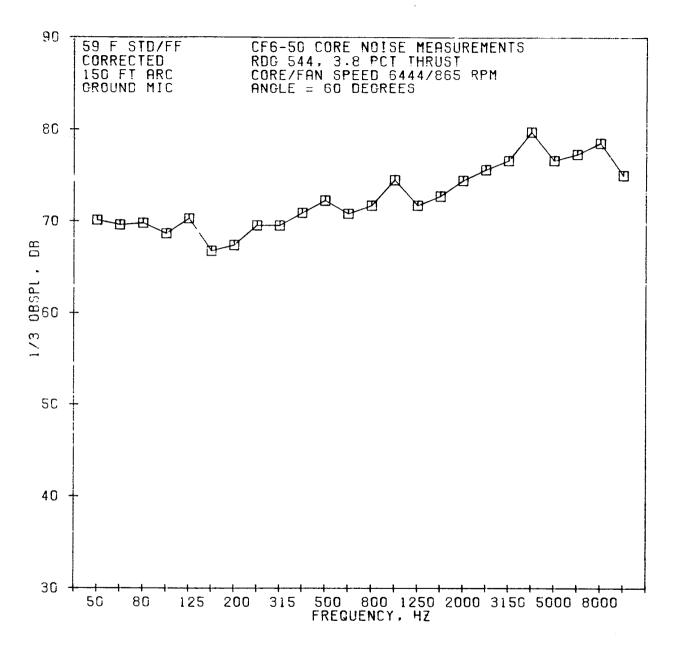
FULL SCALE DATA REDUCTION PROGRAM PROC. DATE - MONTH 2 DAY 9 HR. 15.8 SOUND PRESSURE LEVELS (59. DEG. F, 70 PERCENT REL. HUM. DAY) Table 5h. ANGLES FROM INLET IN DEGREES (AND RADIANS) 10. 40. 70. 100. 110. 120. 130. 140. 150. 160. 80. 90. FREQ. (0,17)(0.52)(0,70)(0.87)(1.05)(1.22)(1.40)(1.57)(1.75)(1.92)(2.09)(2.27)(2.44)(2.62)(2.79) 84.1 85.4 86.4 88.4 89.1 90.6 91.9 94.4 96.9 100.6 106.4 111.9 115.1 50 84.4 83.1 NO EGA 86.9 85.9 88.6 90.1 91.4 92.4 93.6 95.9 98.1 102.4 107.4 110.9 114.9 RADIAL 150, FT. 89,6 89,6 90,6 91,3 91,8 94,8 95,1 97,1 100,1 103,8 109,1 111,2 114,3 (46. M) 92.4 90.9 91.6 92.4 93.4 94.6 95.1 98.1 100.4 104.9 110.4 111.1 112.4 CF6-50 95.3 92.8 93.3 94.0 94.8 96.0 97.8 99.8 102.3 105.5 110.3 112.5 110.3 VEHICLE **E2LFCN** 93.4 92.7 93.9 94.2 95.4 96.7 97.2 99.4 102.2 106.2 109.4 111.4 107.4 CONFIG SITE IVD 200 89.6 93.8 93.6 94.1 94.8 95.6 96.1 97.6 99.1 102.3 105.3 108.6 108.8 106.3 LOC DATE 12-18-78 92.5 93.7 94.2 94.0 94.5 94.5 96.5 97.0 98.7 102.0 104.2 107.0 106.5 104.0 150 FT GND 93.7- 94.5 94.5 94.0 95.0 95.0 96.2 97.2 99.0 101.2 103.7 105.0 104.2 100.7 RUN X05670 400 95.4 + 95.6 95.9 95.9 95.6 95.1 96.4 97.6 99.1 101.4 103.4 104.1 102.1 98.9 BAR 28.2 HG 500 90.7 94.2 95.7 96.2 95.2 94.5 94.7 96,2 97,5 98,5 100,5 102,2 102,5 100,2 96,7 (95166, N/M2) 96.0 96.0 94.8 93.8 94.3 95.5 96.0 97.3 99.8 100.8 100.5 98.3 95.0 630 TAMB 30. DEG F 800 90.9 95.4 95 7 95.2 94.2 94.4 95.4 95.9 97.2 99.4 99.9 100.2 97.2 94.9 (272, DEG K) 1000 90.4 93.7 95.4 94.9 95.7 94.4 94.9 95.9 95.9 96.7 98.7 98.4 98.2 95.2 93.4 TWET 26, DEG F 1250 90.9 94.4 96.2 95.4 95.7 95.4 95.7 95.7 96.2 96.4 97.9 98.9 98.4 95.7 98,2 97,2 96.9 96,4 96,4 96,4 97.7 96,4 97,4 98,2 97.9 95.2 93,4 (270, DEG K) 1600 94.9 96.9 98.9 98.1 98.4 97.1 96.6 97.1 97.6 98.1 98.9 98.4 97.9 94.4 92.6 HACT O. GM/M3 2000 94.9 (***** FG/M3) 2500 99.1 101.3 99.3 100.1 98.3 98.6 99.3 99.8 100.3 101.1 99.8 98.0 NFA 3599, RPM 3150 93.0 94.8 96.3 96.8 96.5 95.5 95.5 95.8 96.5 98.5 98.3 95.5 95.0 92.0 92.4 92.2 92.0 94.2 95.4 \$4.6 97.5 97.5 95.8 92.5 92.3 87.6 (377, RAD/SEC) 4000 92.7 NEK 3703, RPM 5000 93.0 94.9 87.8 89.7 92.5 93.4 96.7 97.7 96.7 96.1 97.4 97.8 93.3 94.0 89.4 (388 PAD/SEC) 6300 86.7 90.1 94.1 92.3 94.7 95.1 94.9 96.9 99.6 97.2 97.0 97.5 94.7 94.7 89.9 66.9 90.1 91.2 91.5 89.8 90.4 90.8 92.7 94.4 95.7 95.7 96.8 92.9 96.1 86.0 i. RPM 8000 (.0, RAD/300)10000 84.0 88.5 83.9 88.8 84.9 87.7 88.6 90.3 91.3 93.7 94.5 96.3 89.0 96.0 83.6 OVERALL SPL 105.9 107.6 108 9 108.3 108.5 108.1 1**08.6 109.7 110.5 111.6 113.5 115.7 118.7 120.3 121.3**

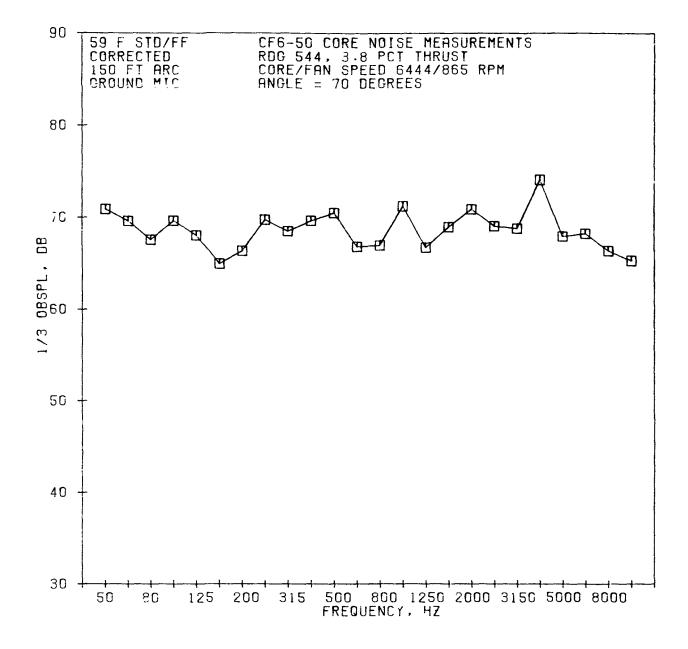


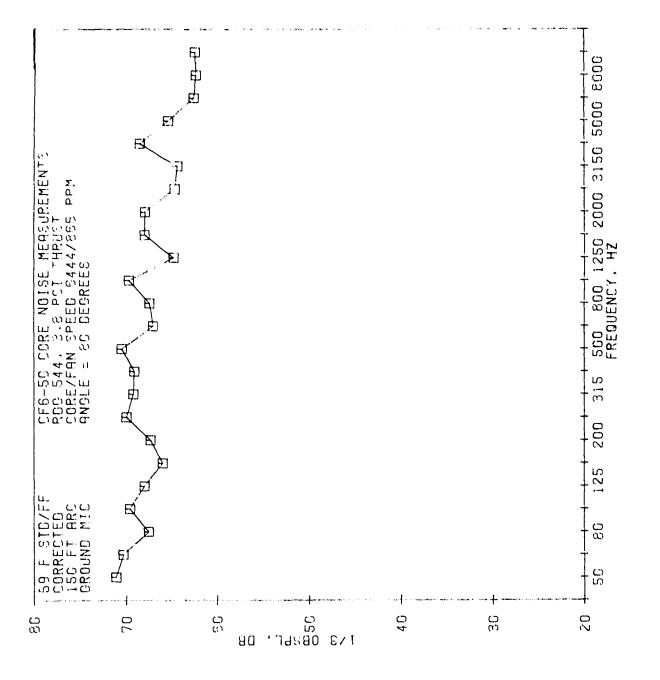


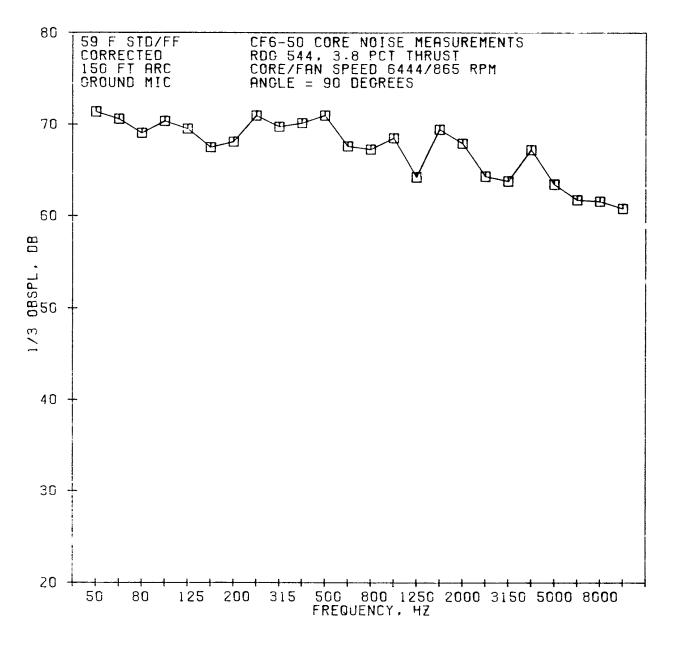


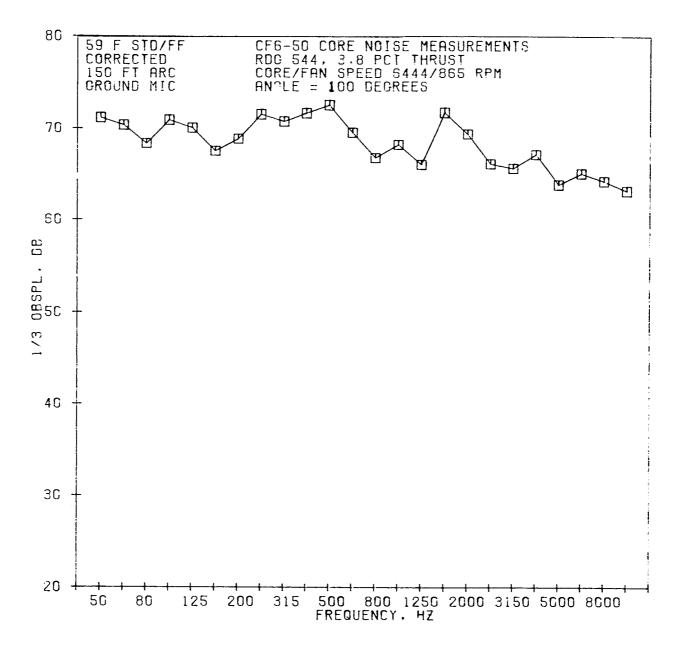


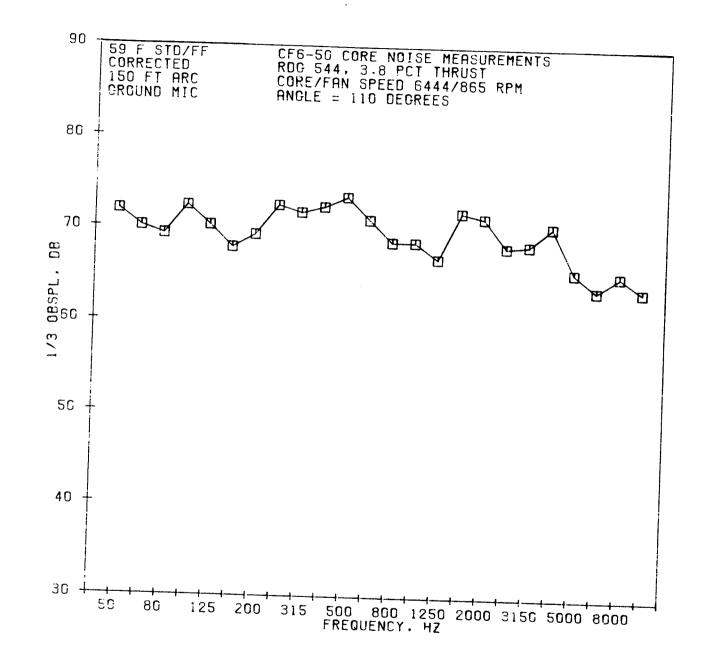


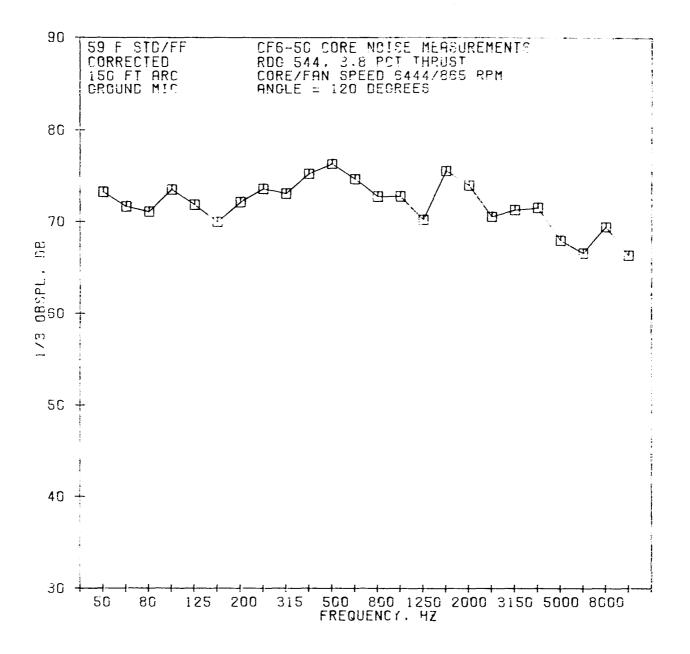


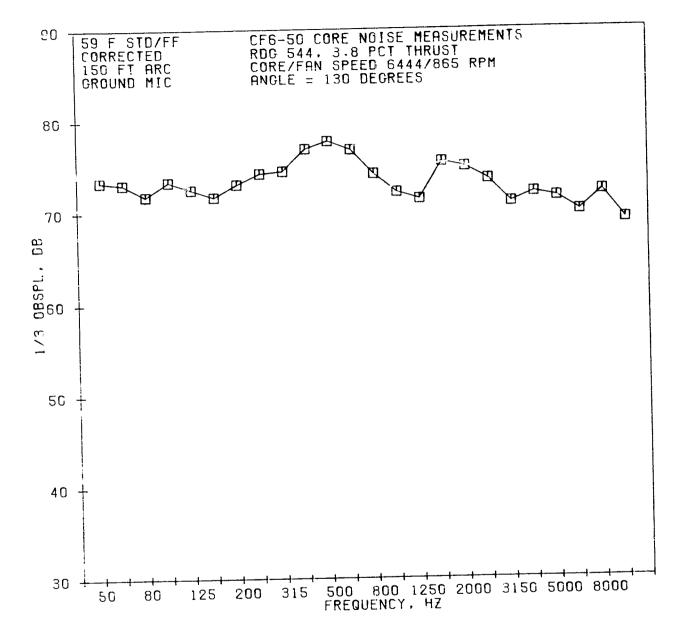


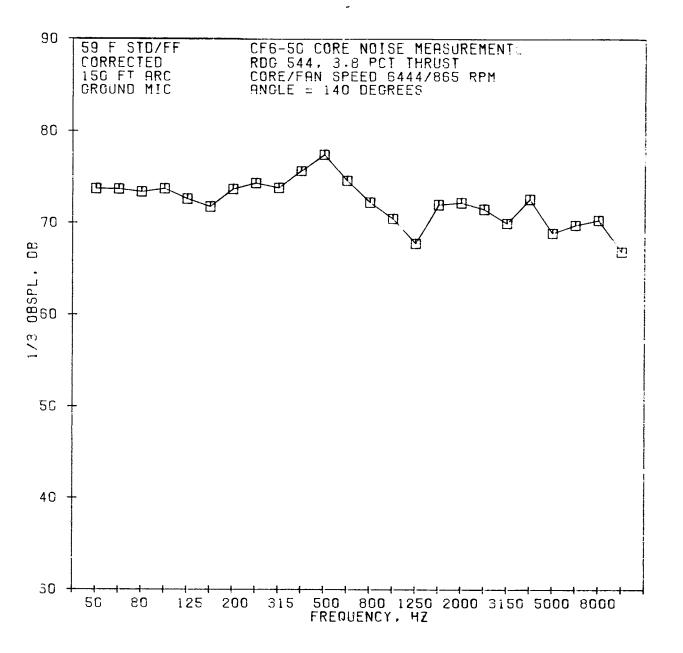


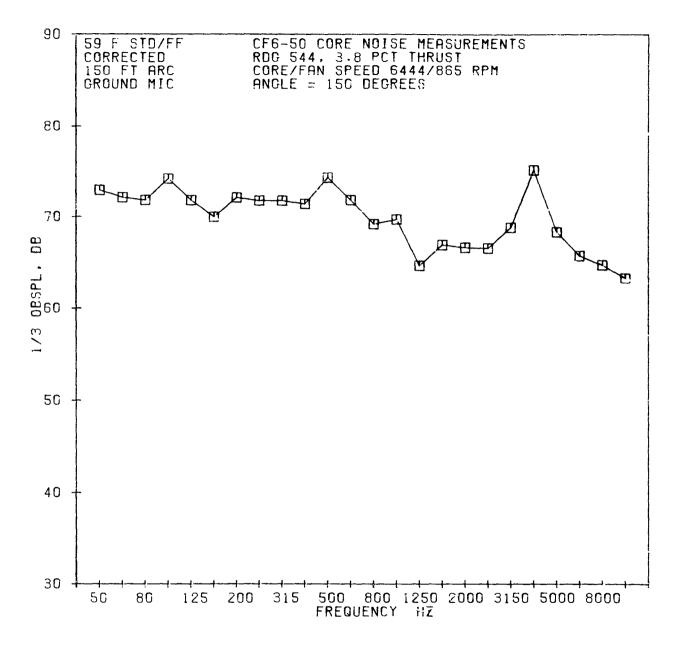


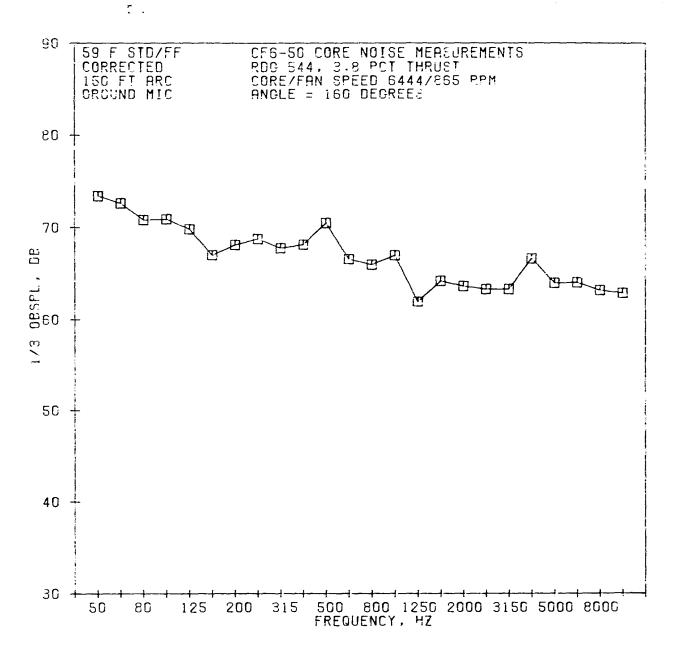


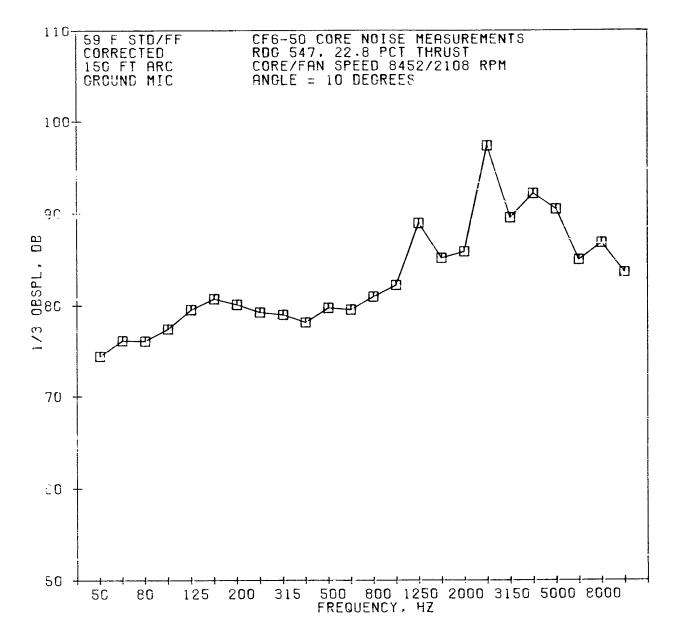


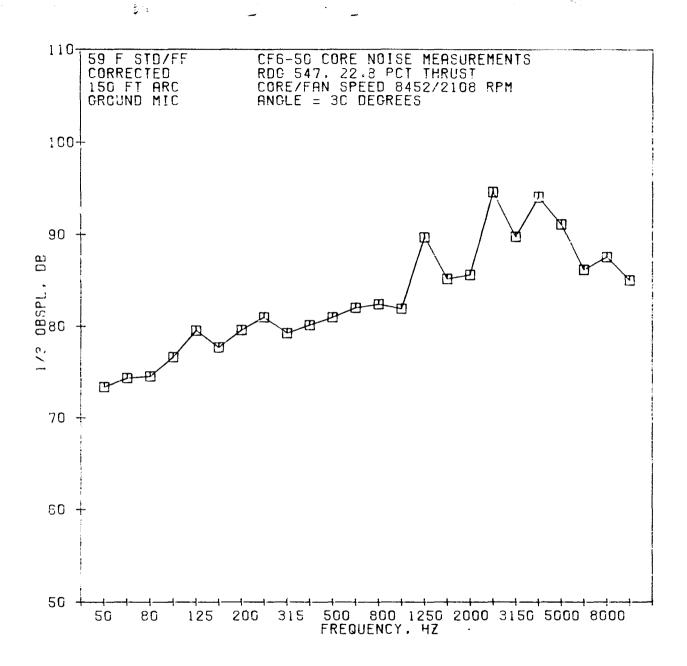


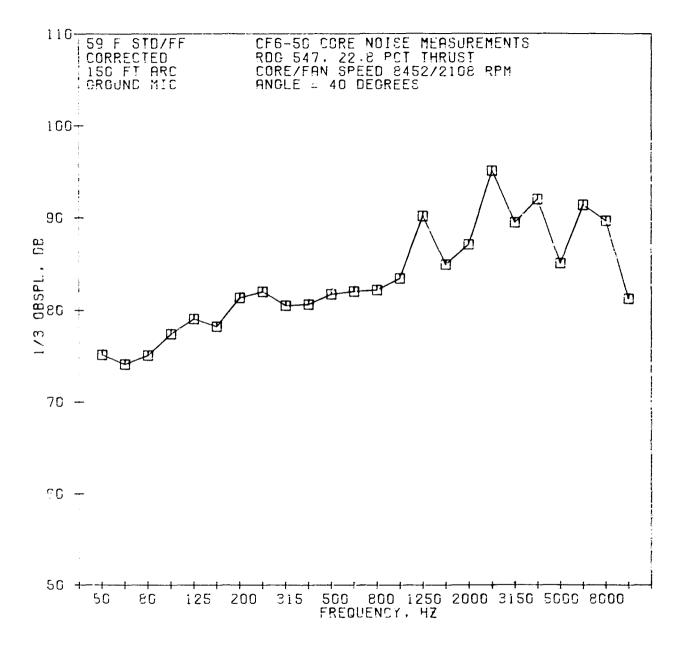


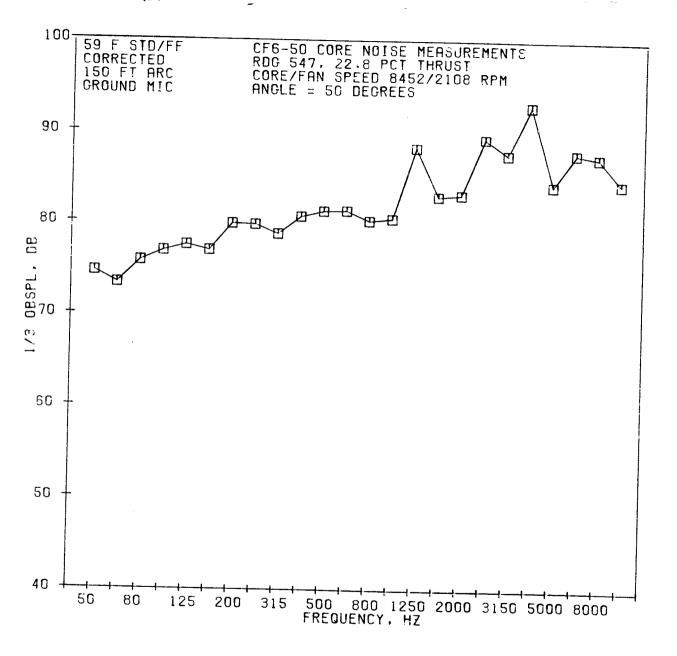


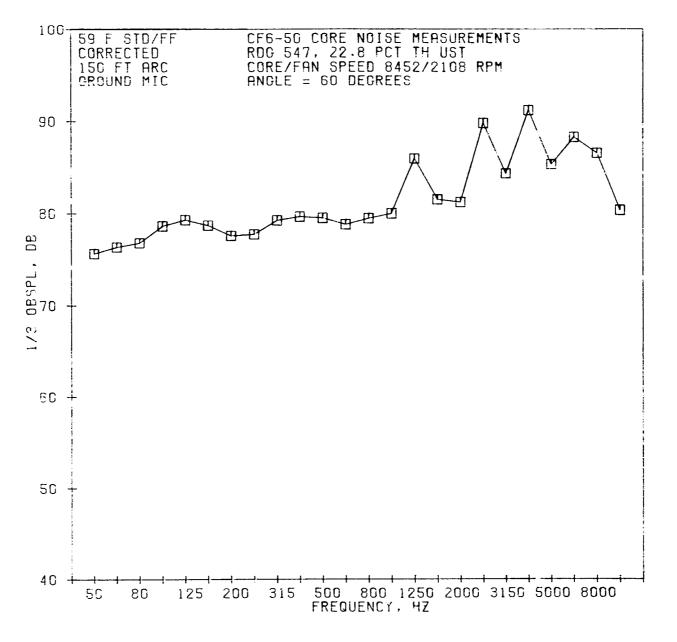


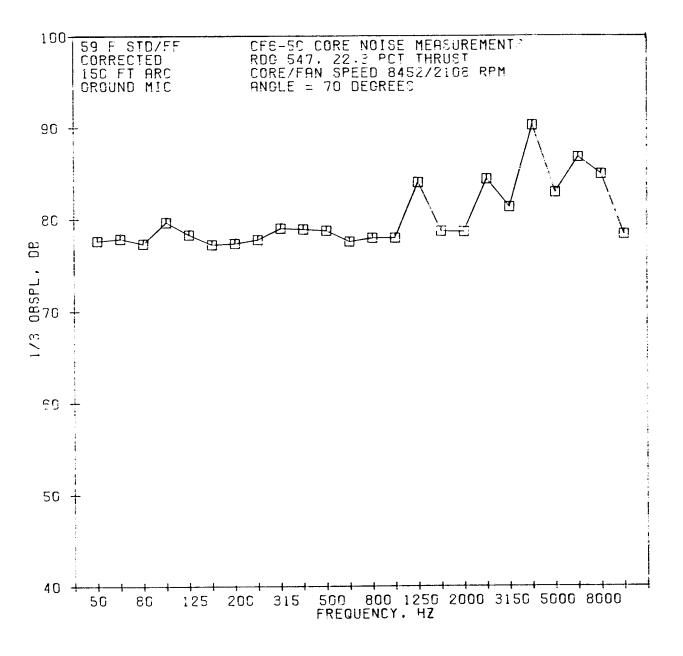


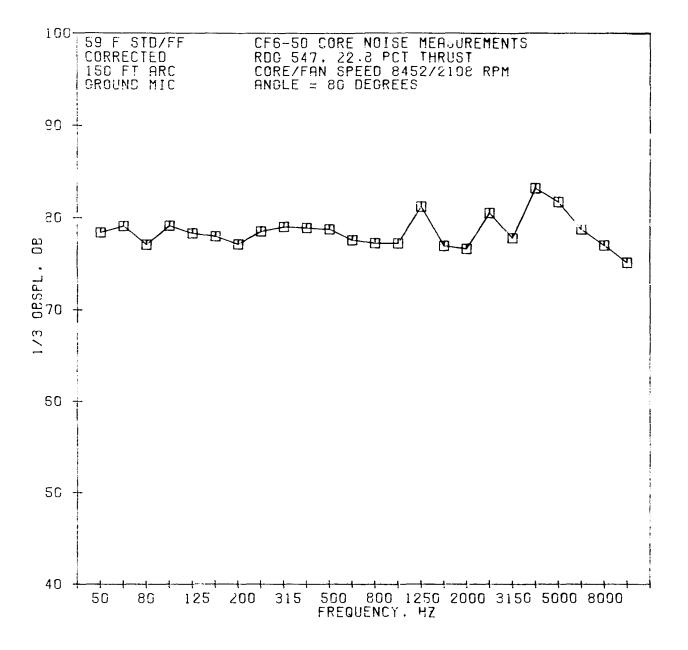


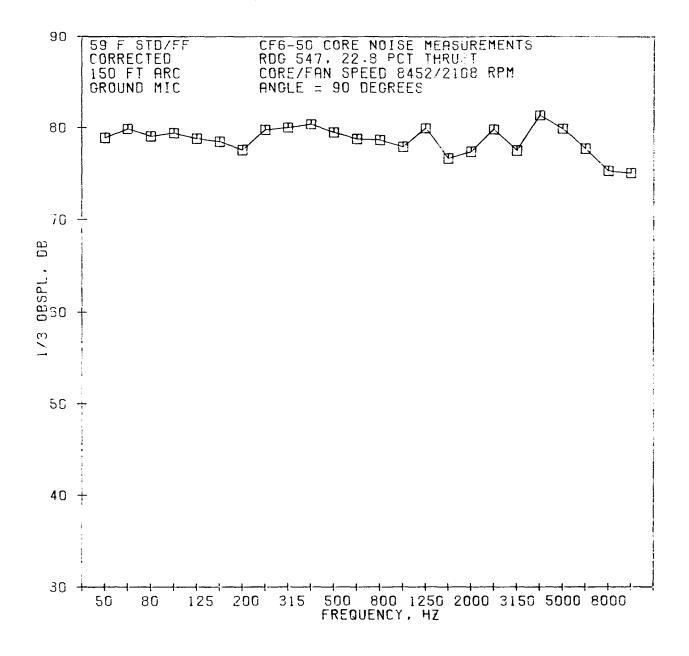


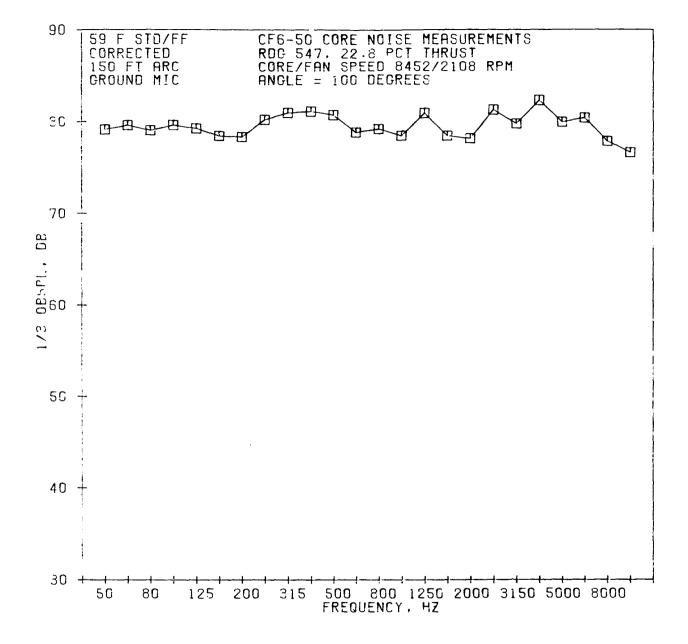


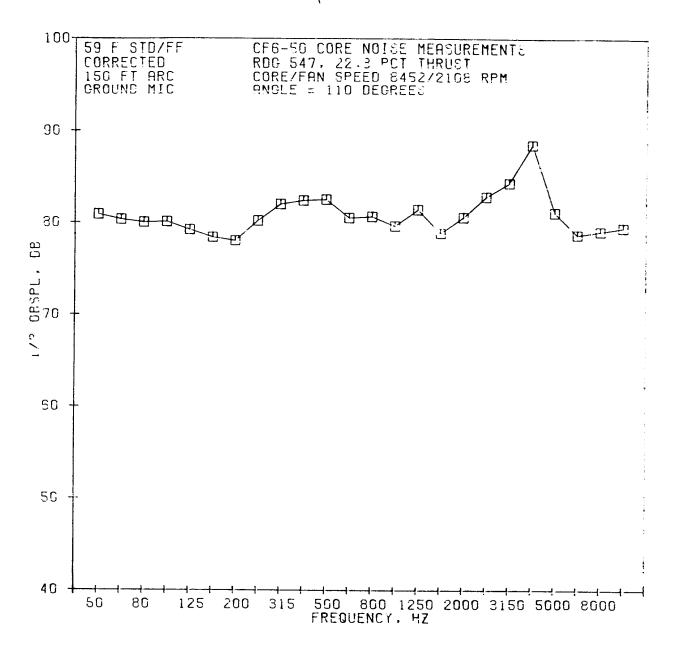




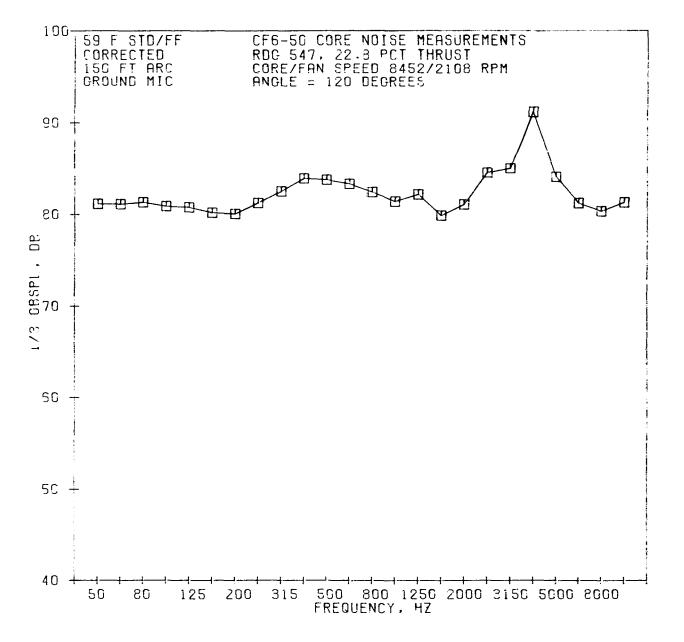


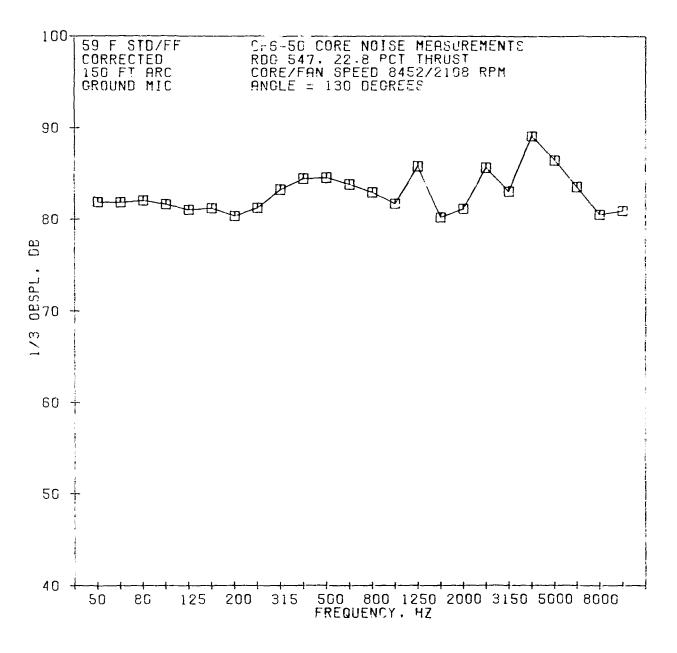


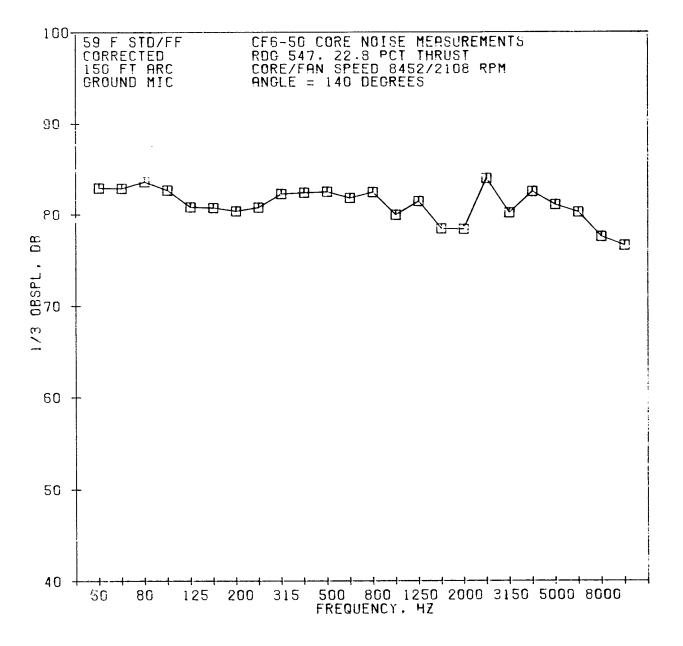




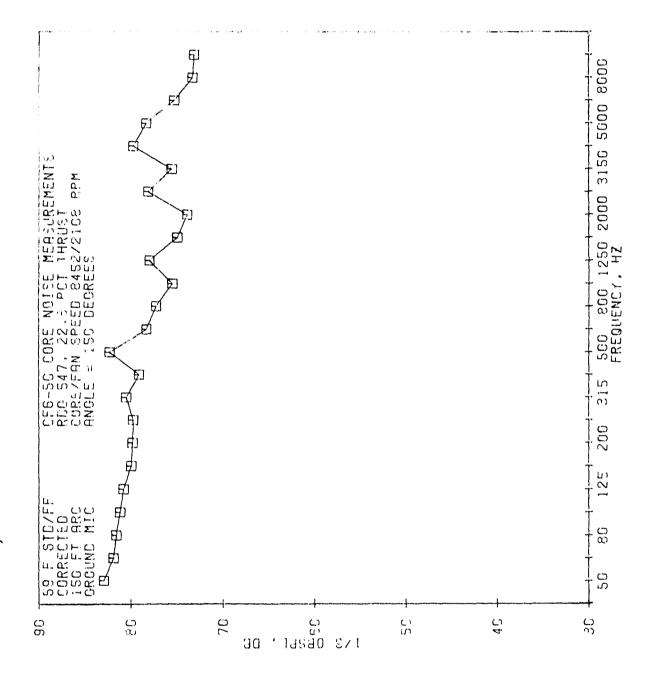
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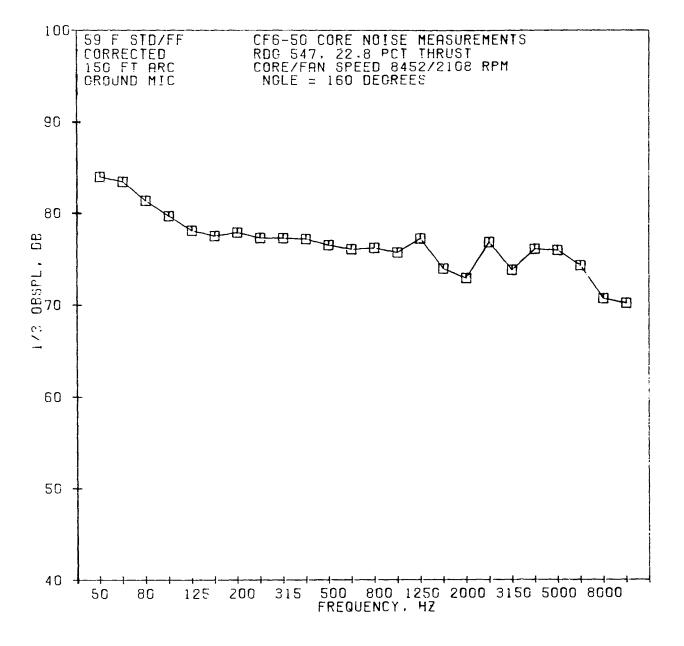


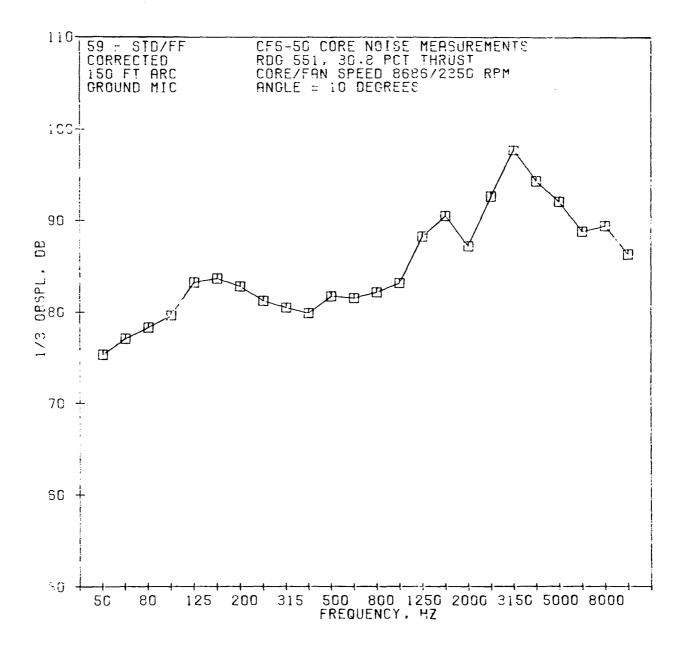


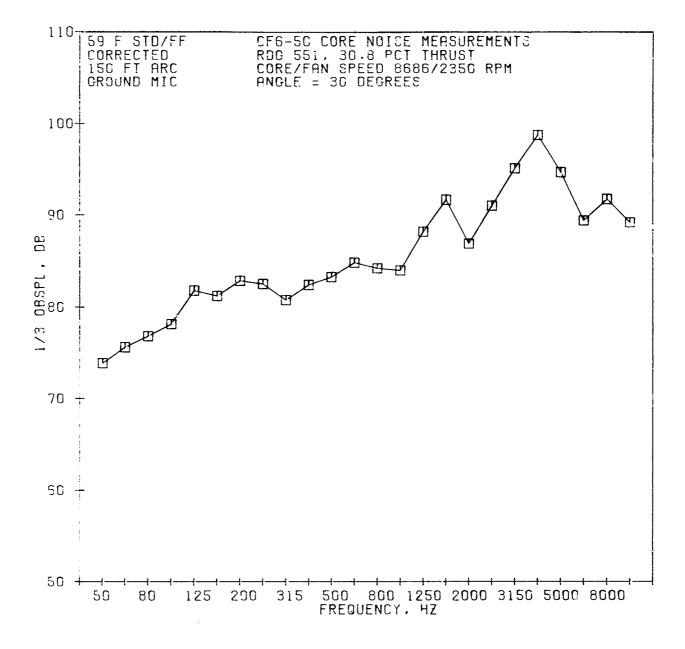


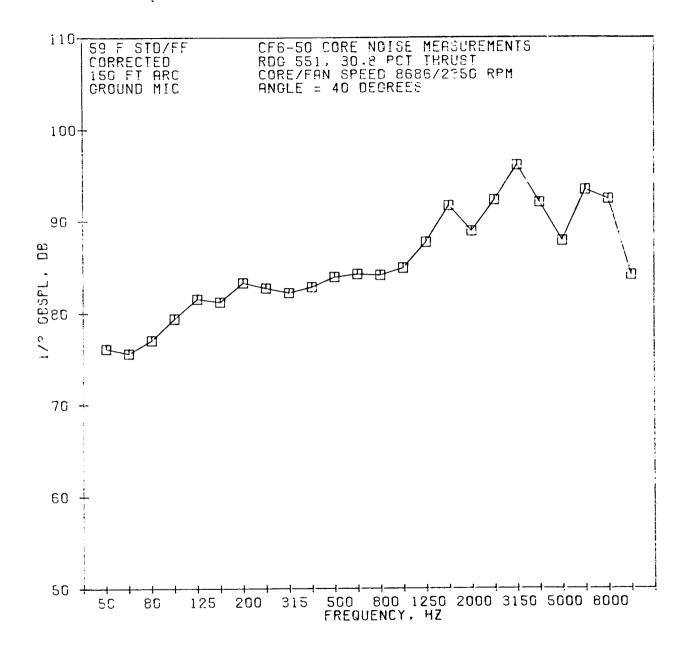
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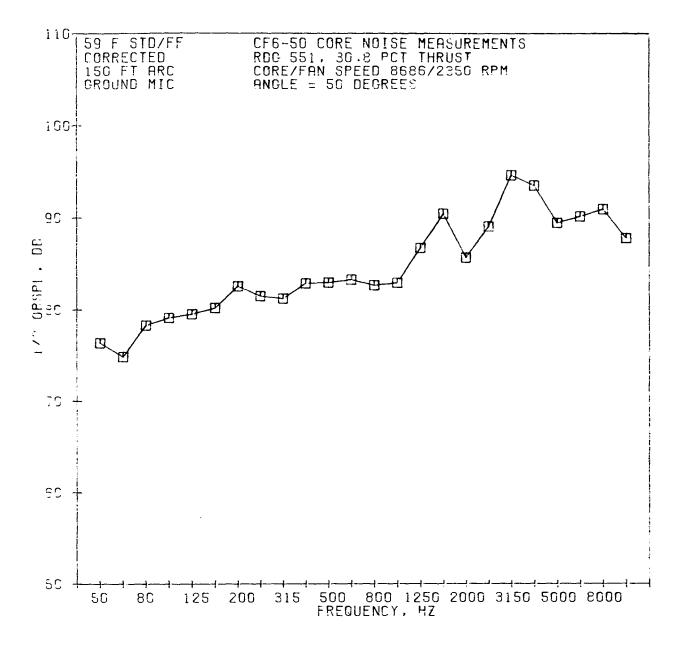


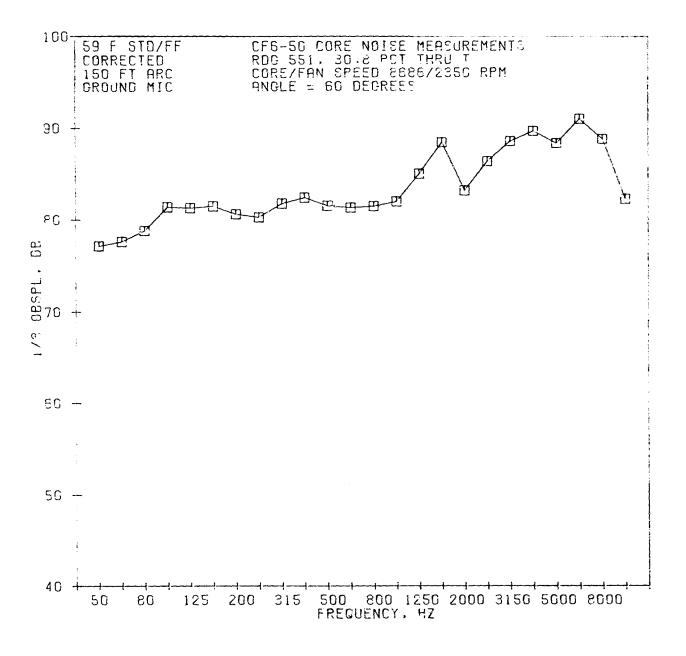


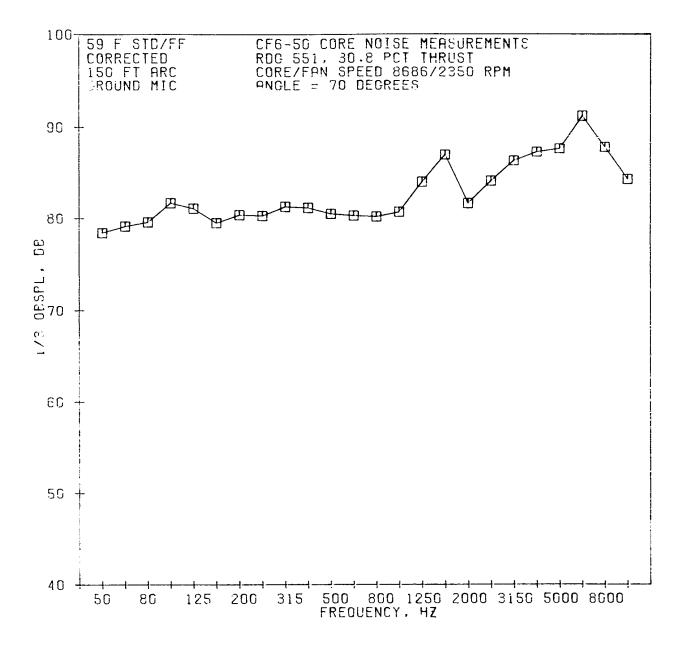


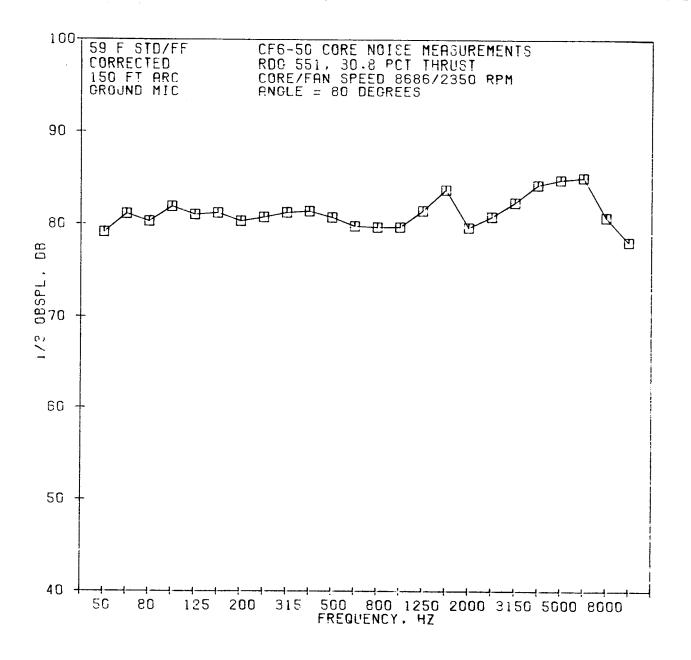


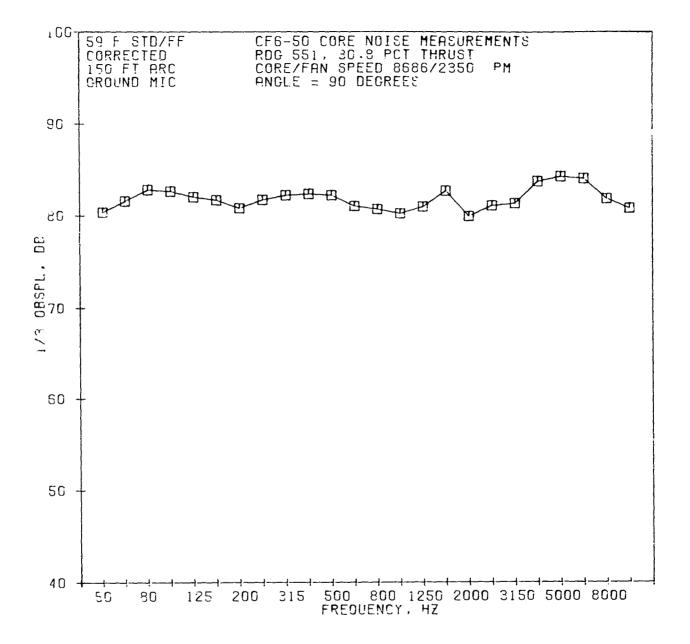


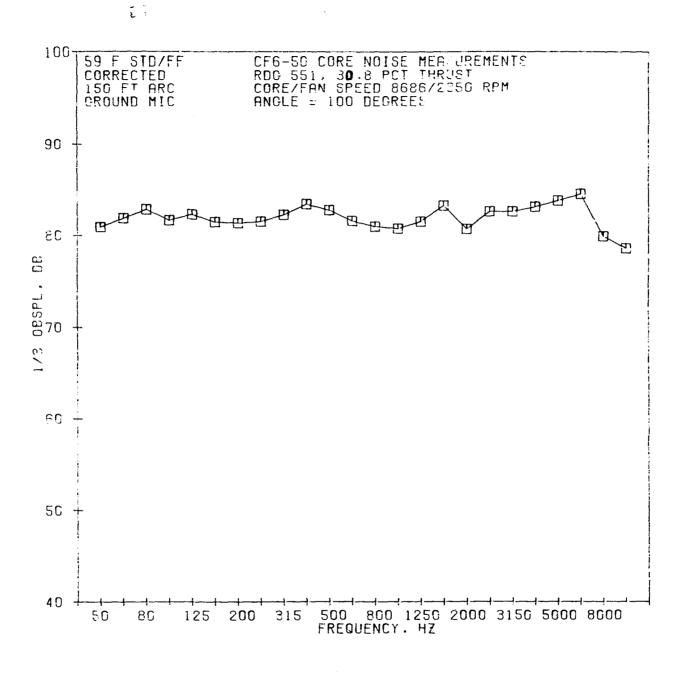


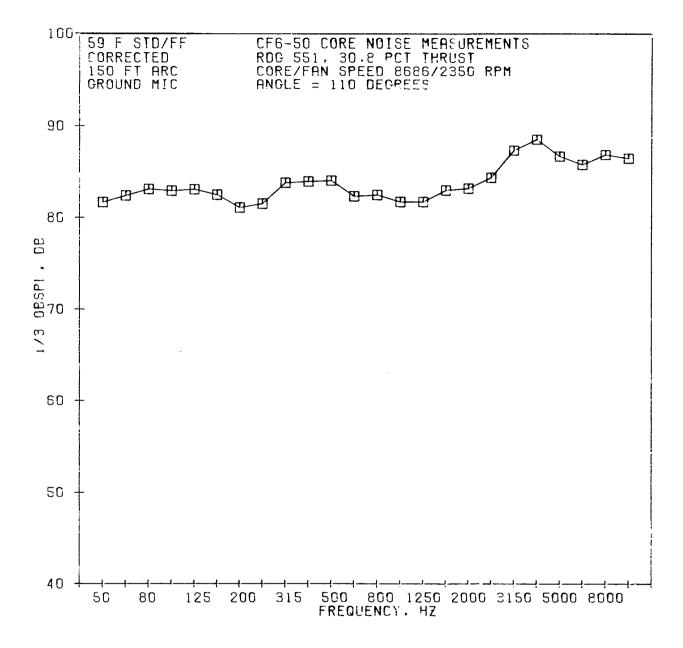


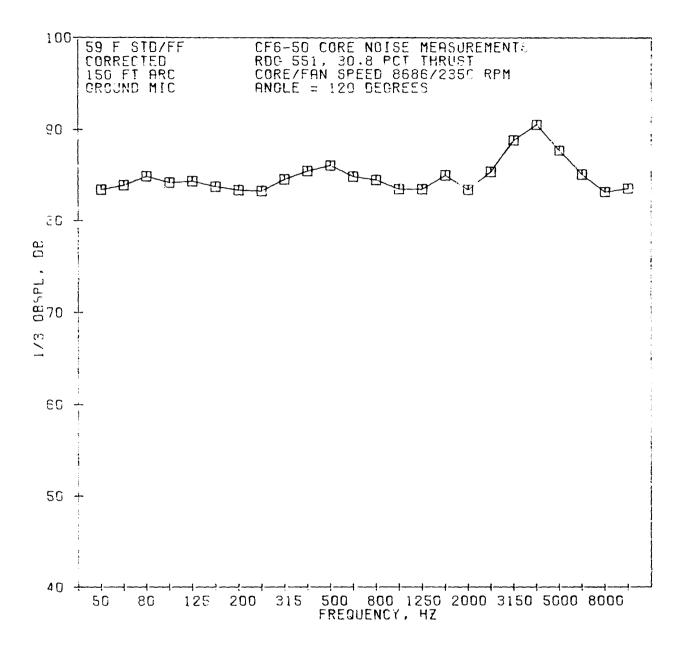


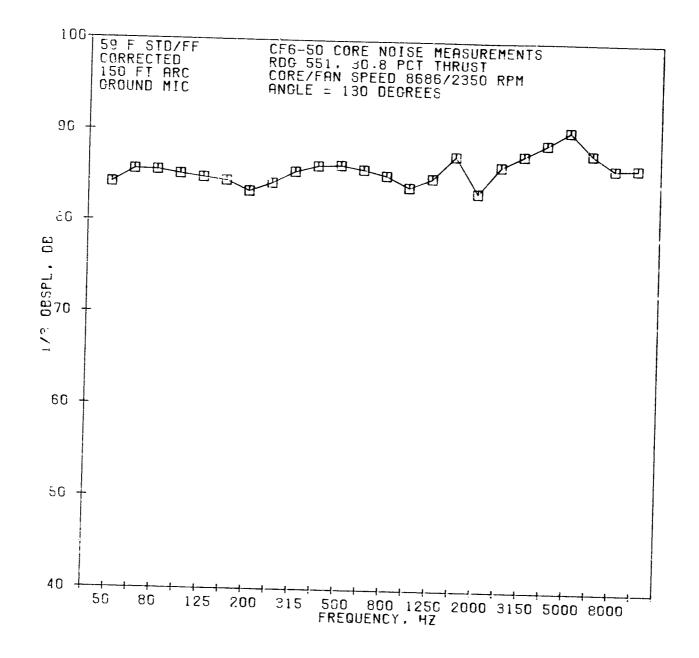




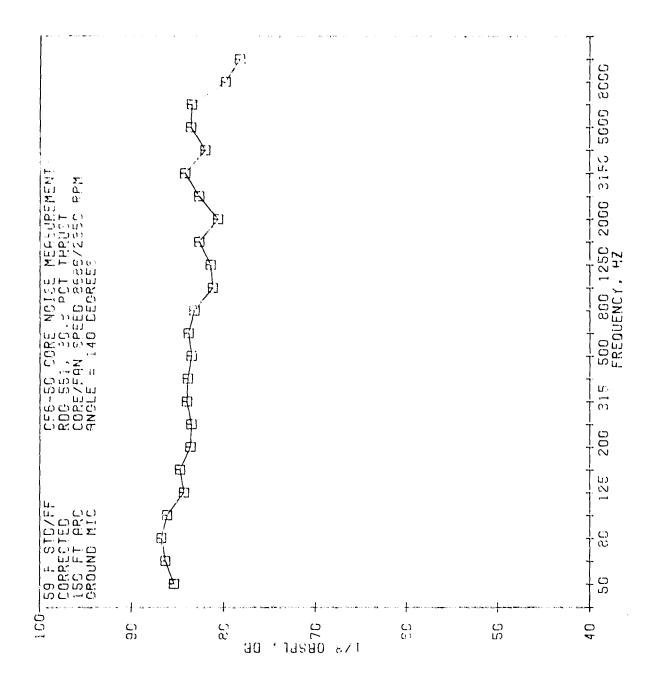


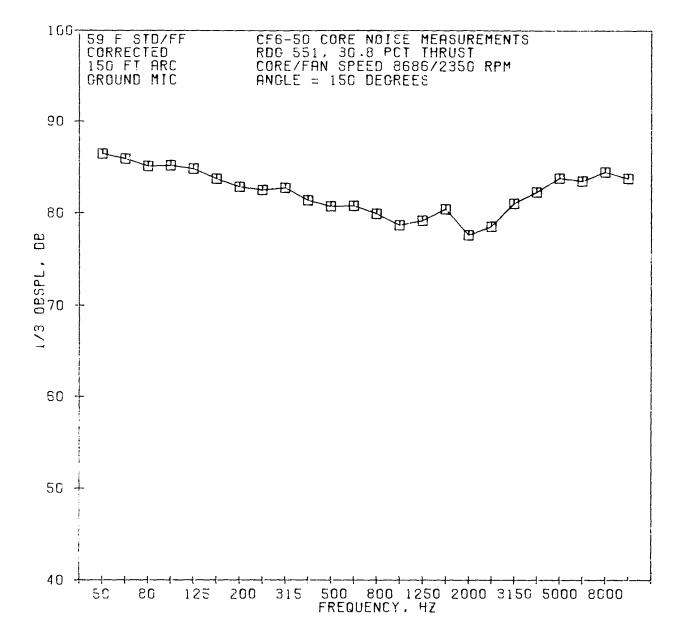


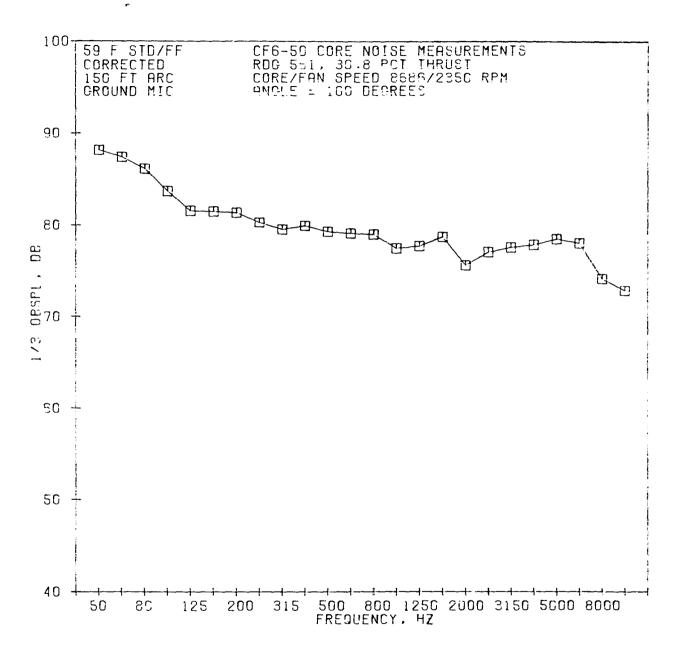


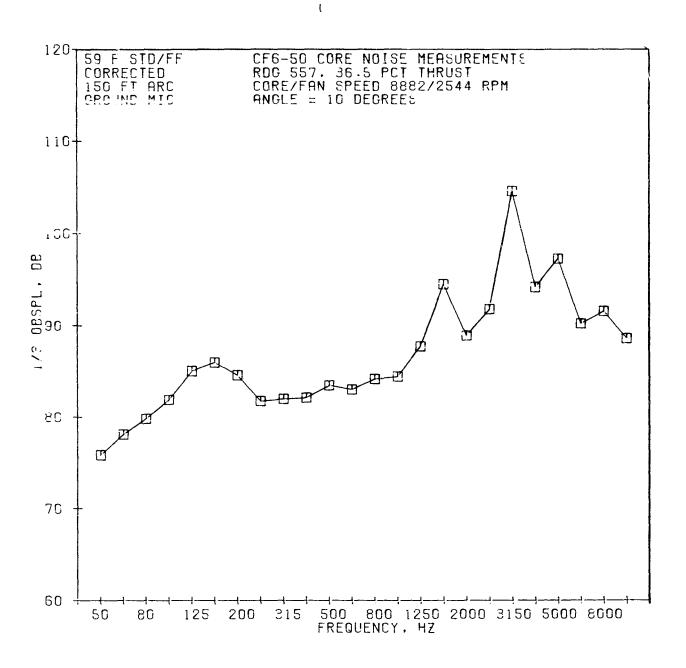


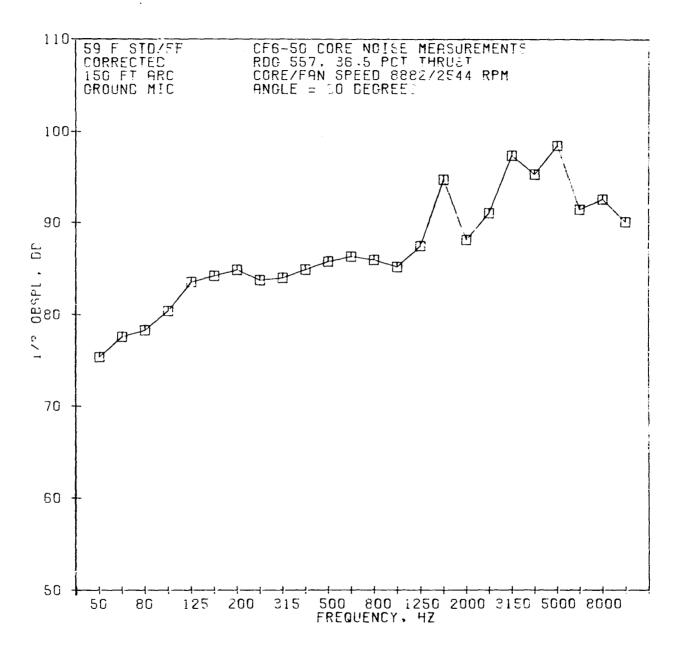
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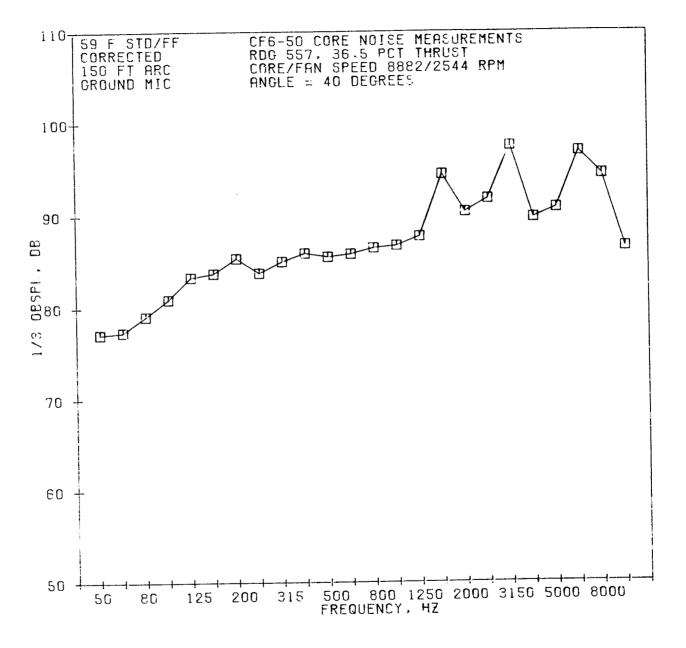


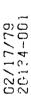


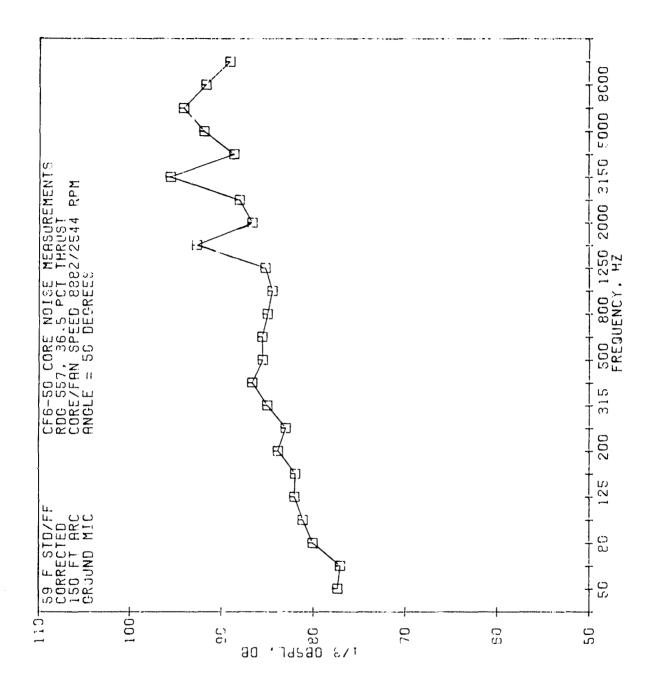


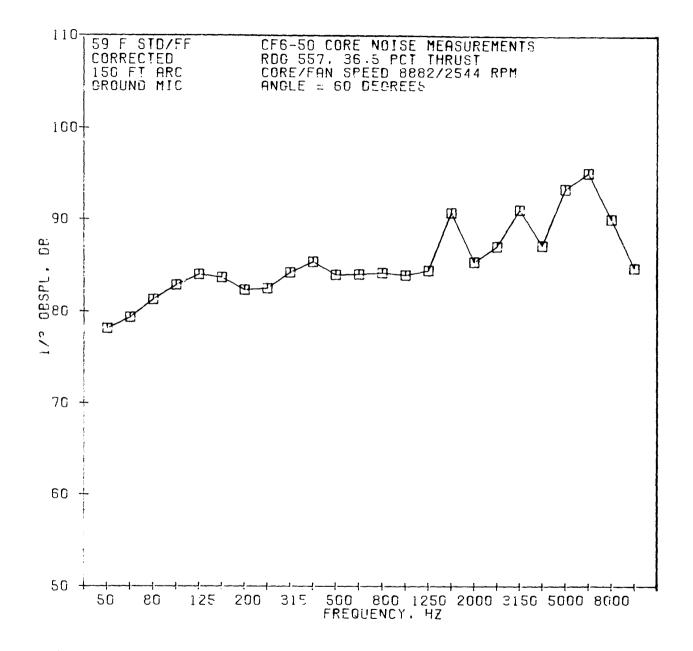


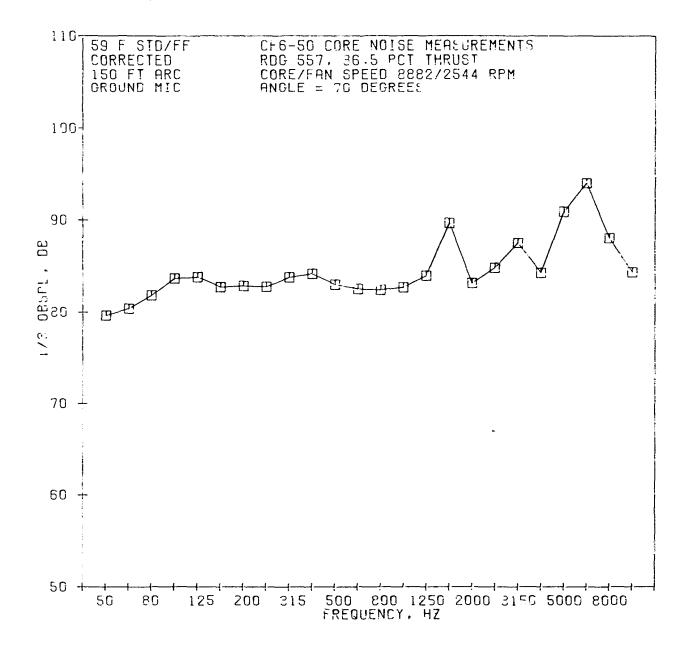


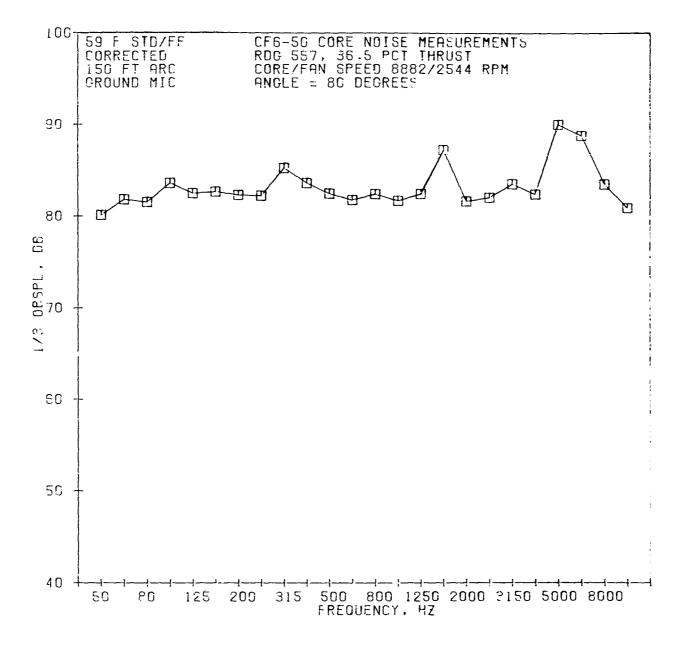


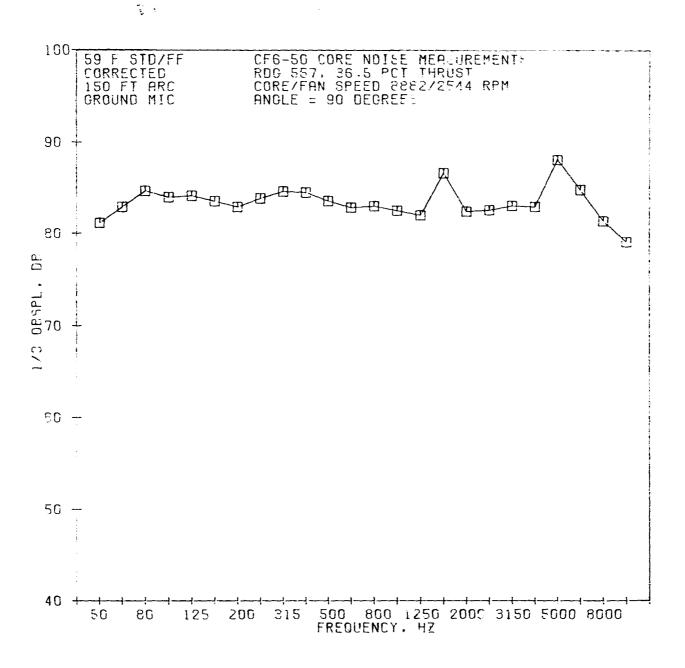


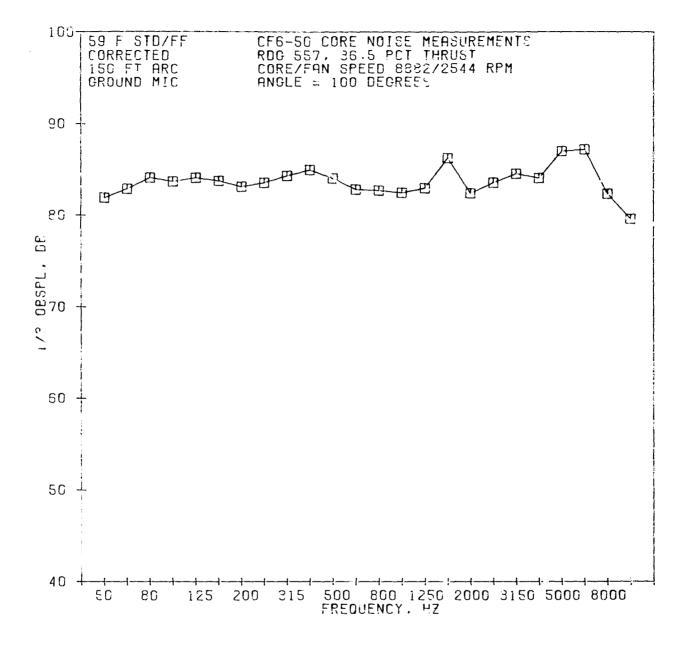


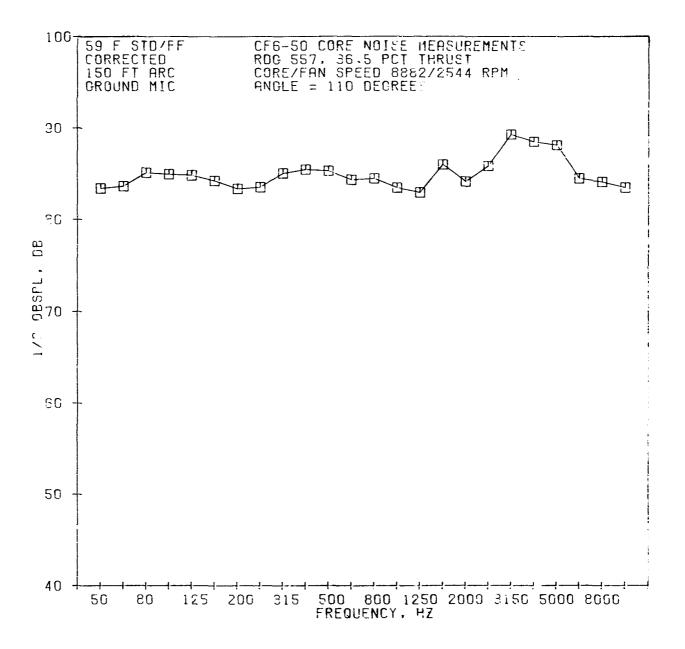




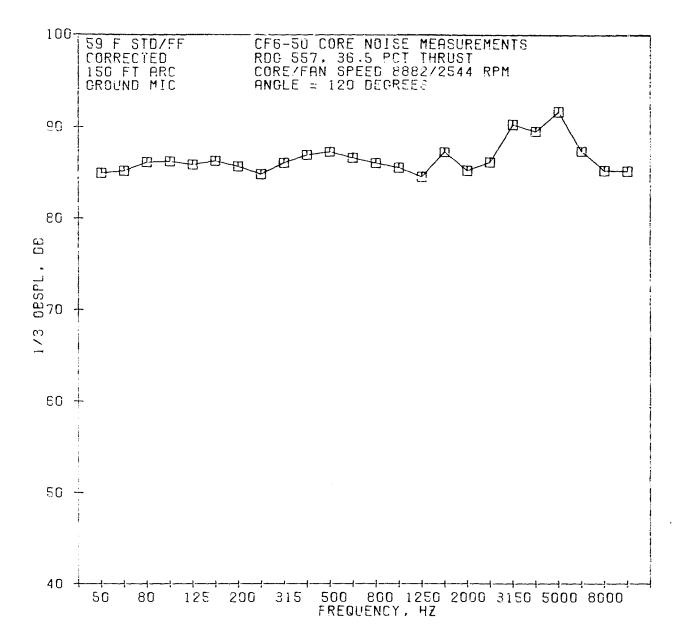






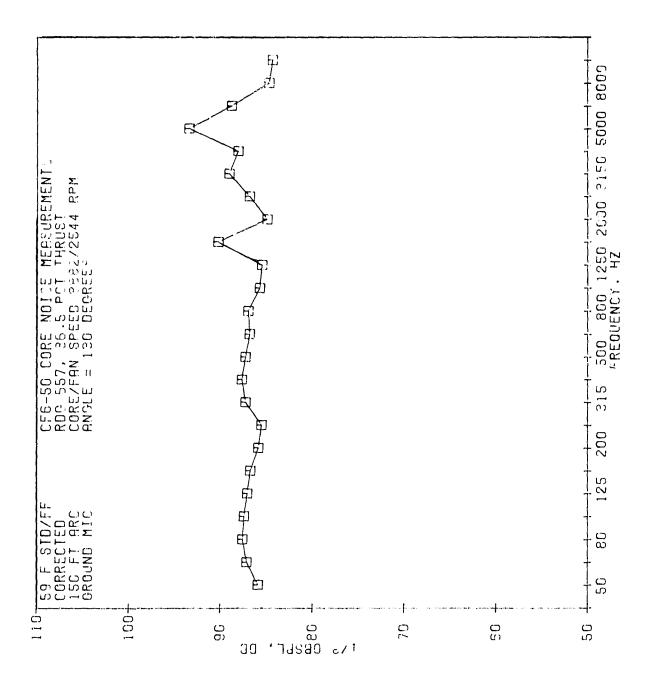




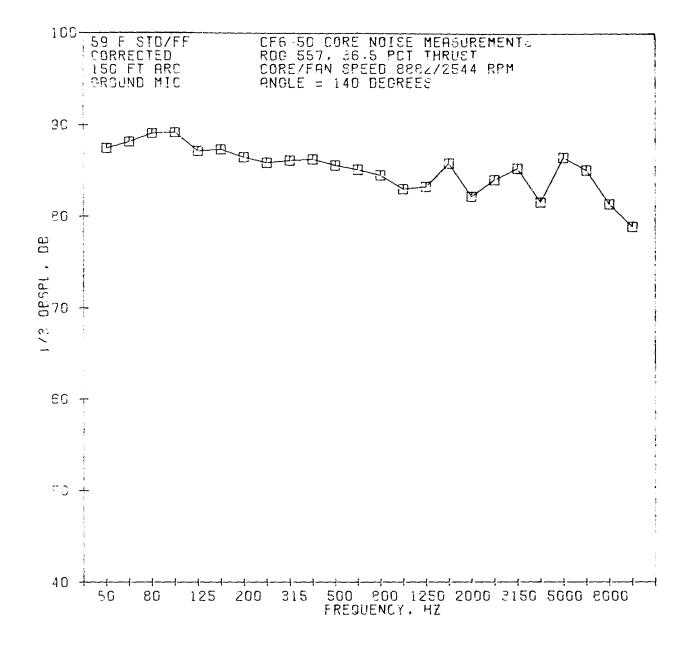


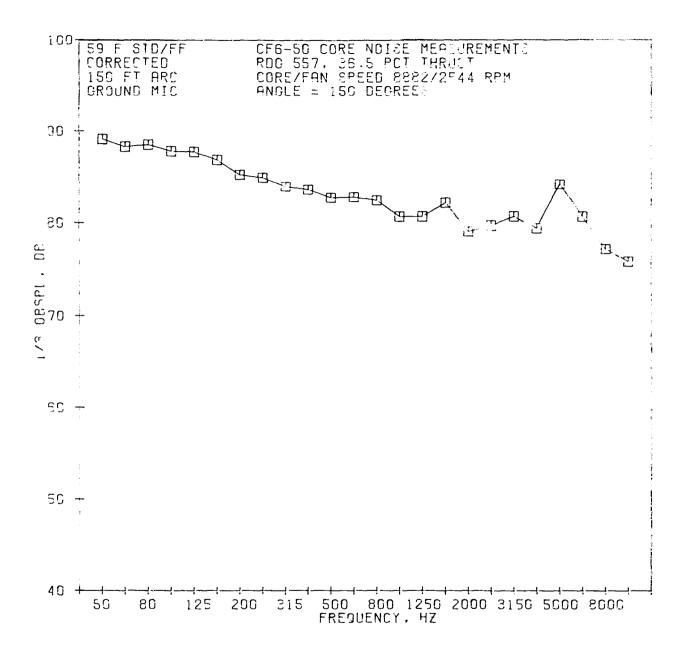
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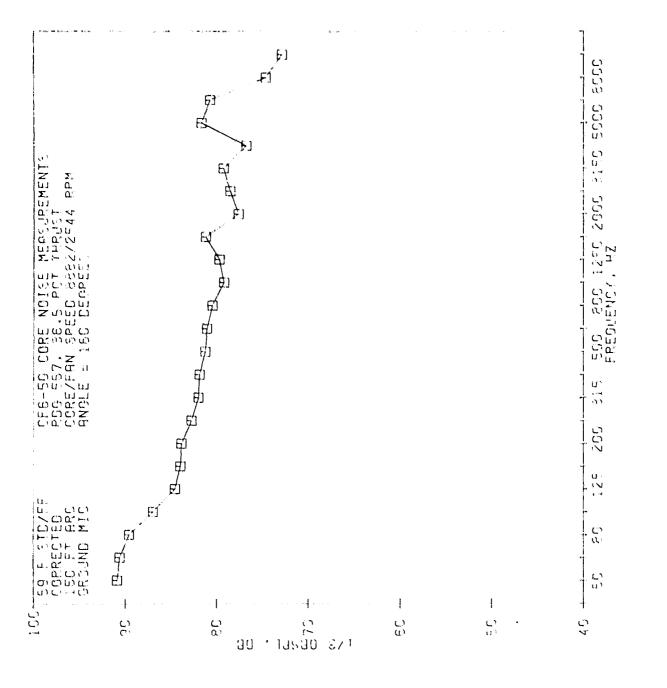


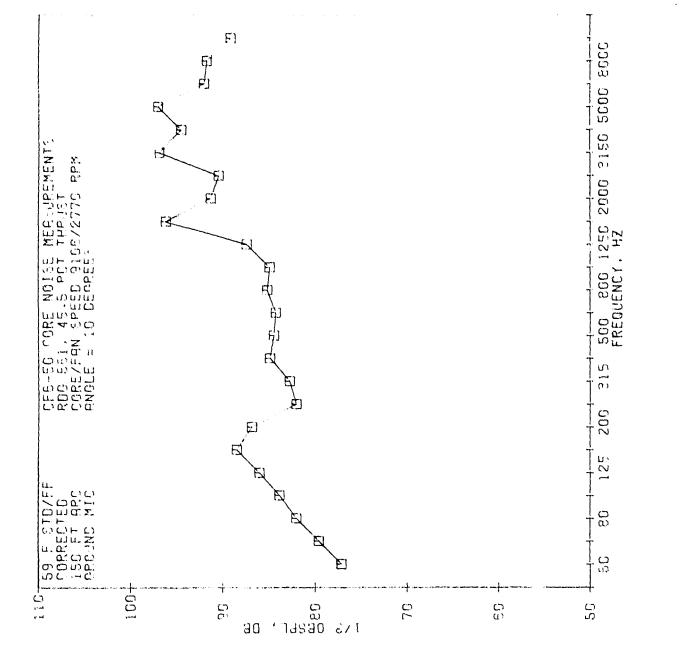
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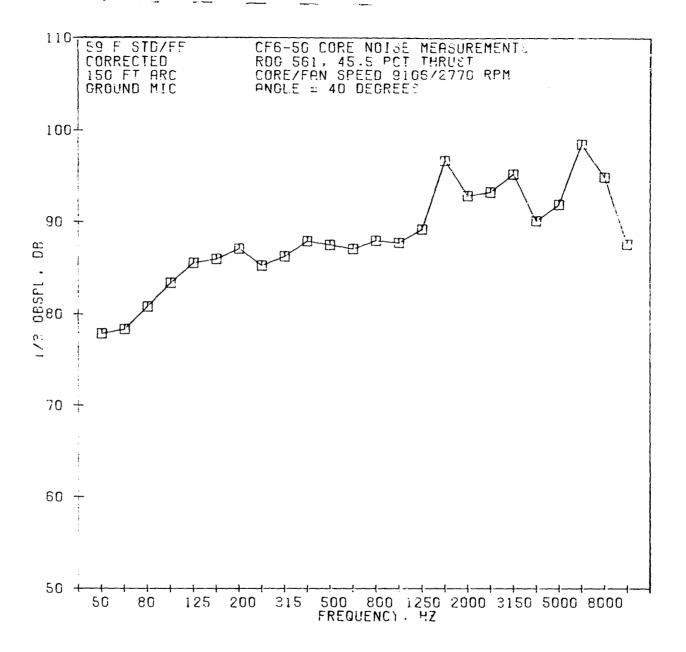


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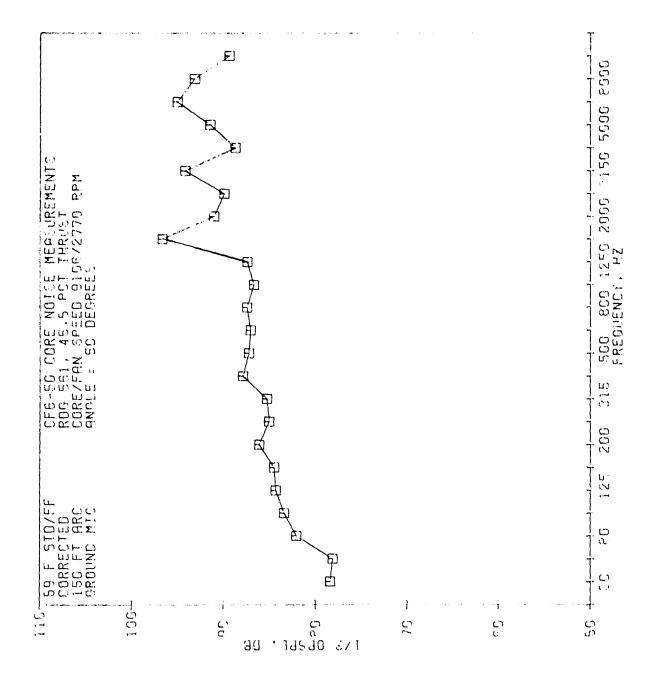


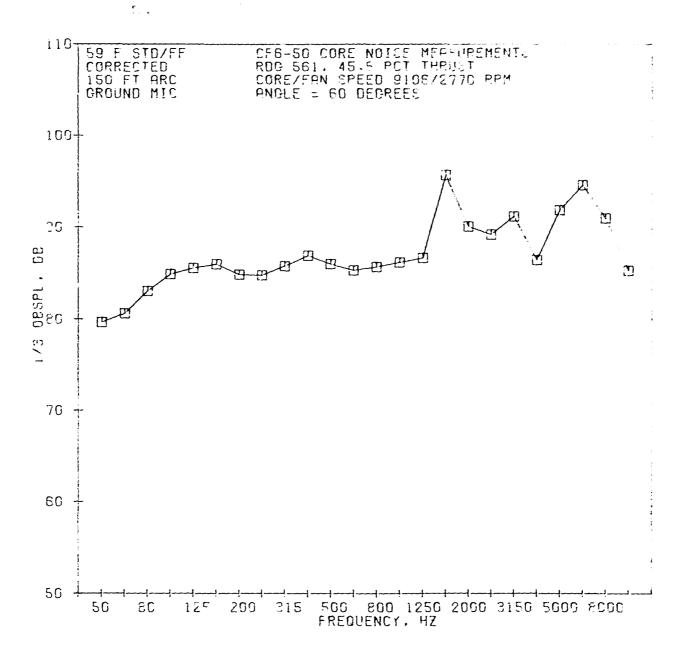
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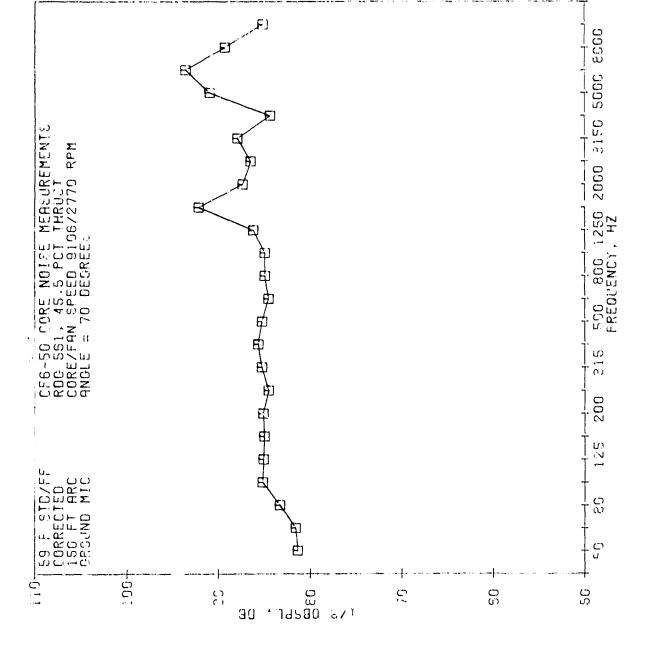


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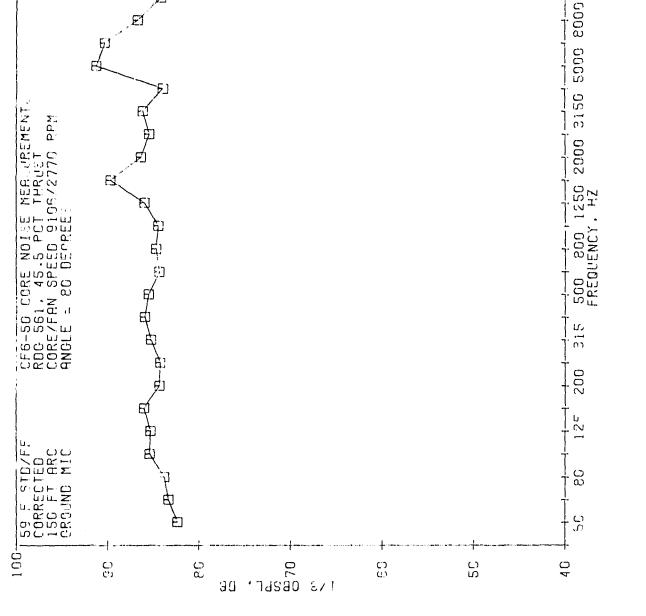


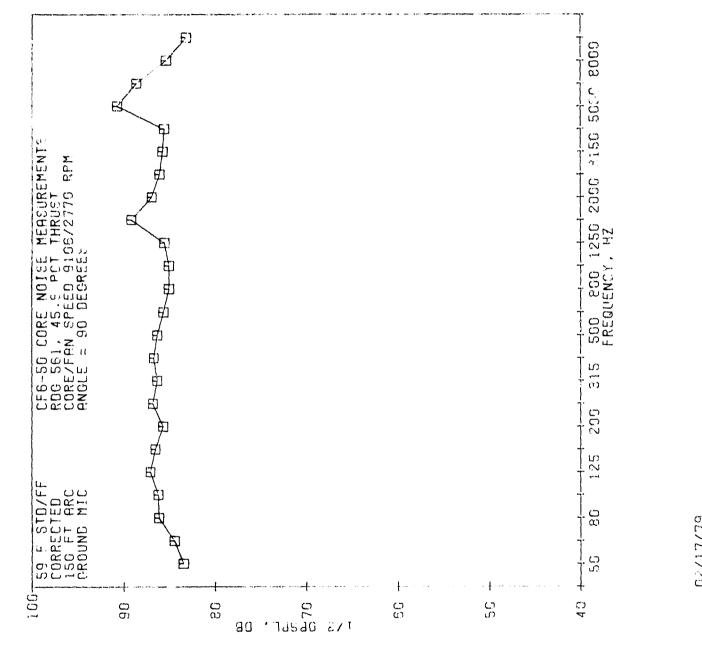


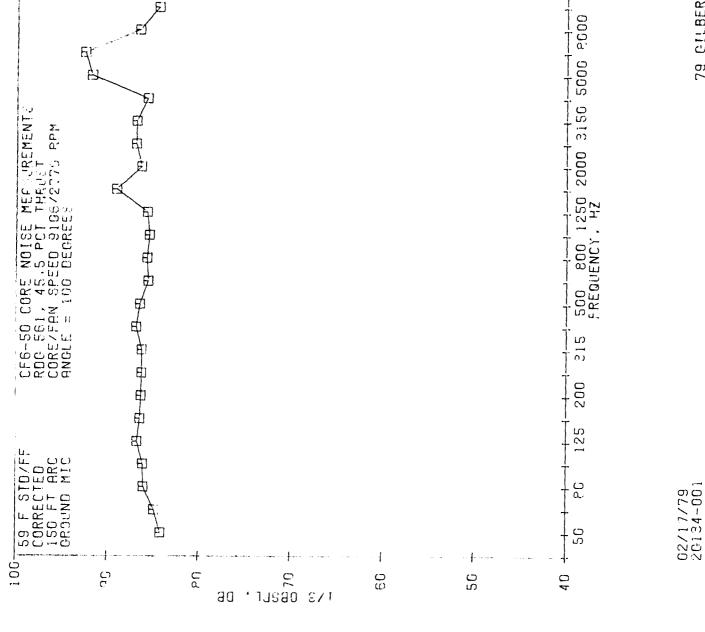




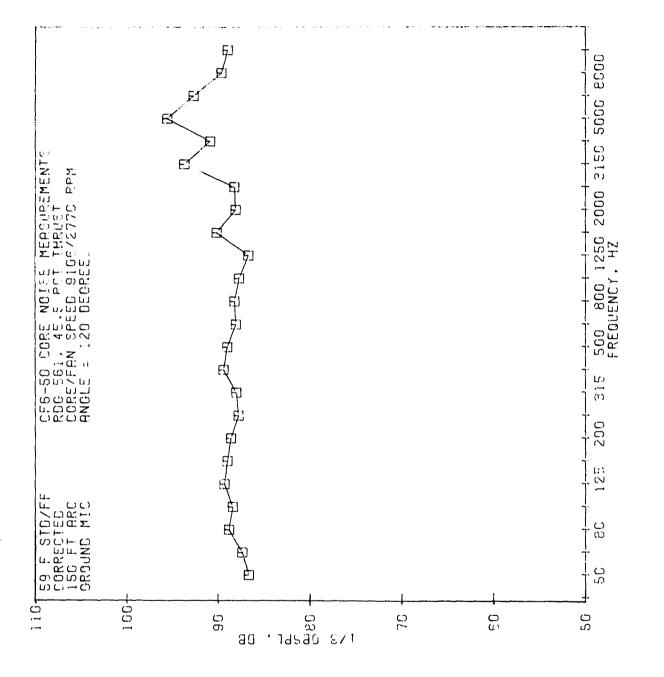
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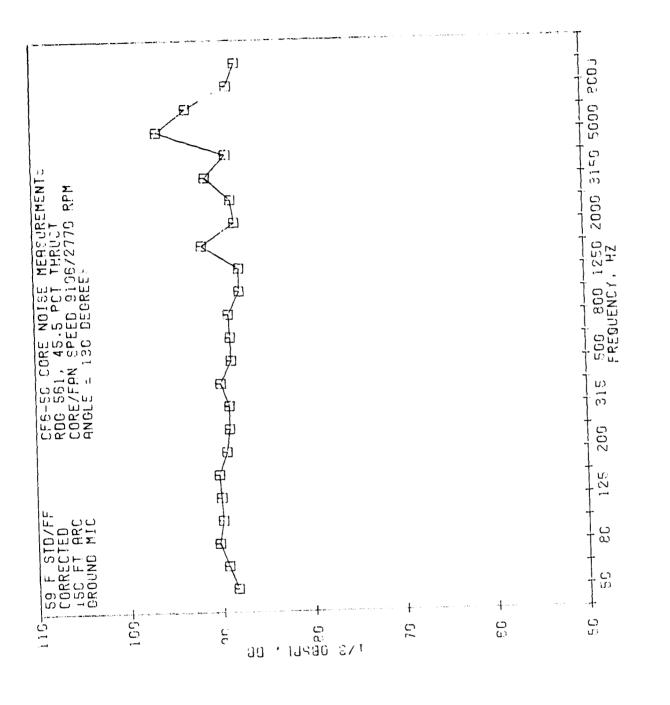




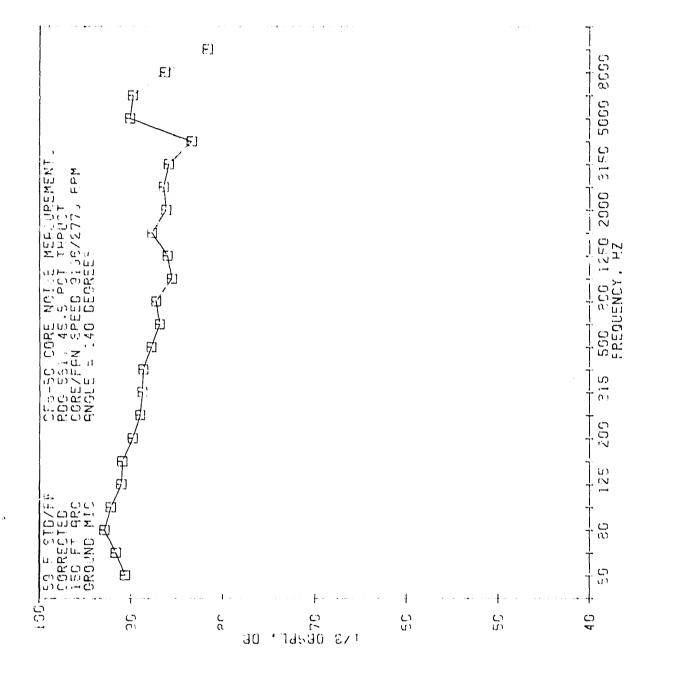
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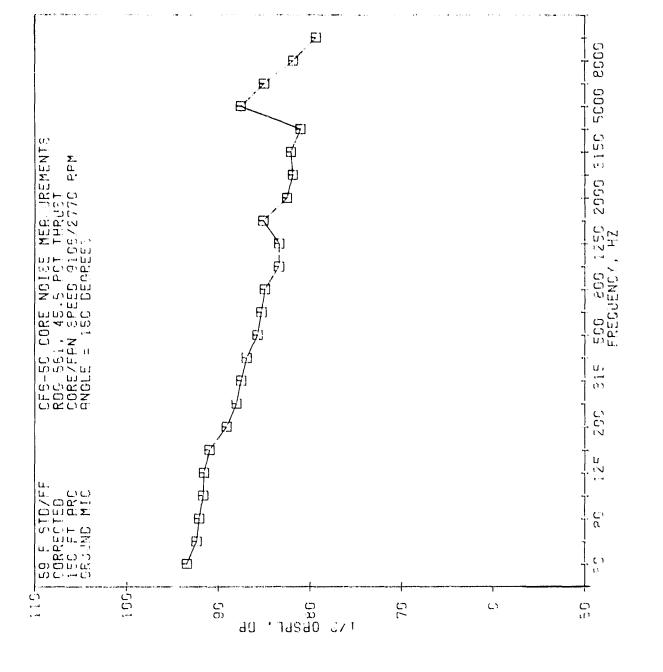


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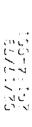
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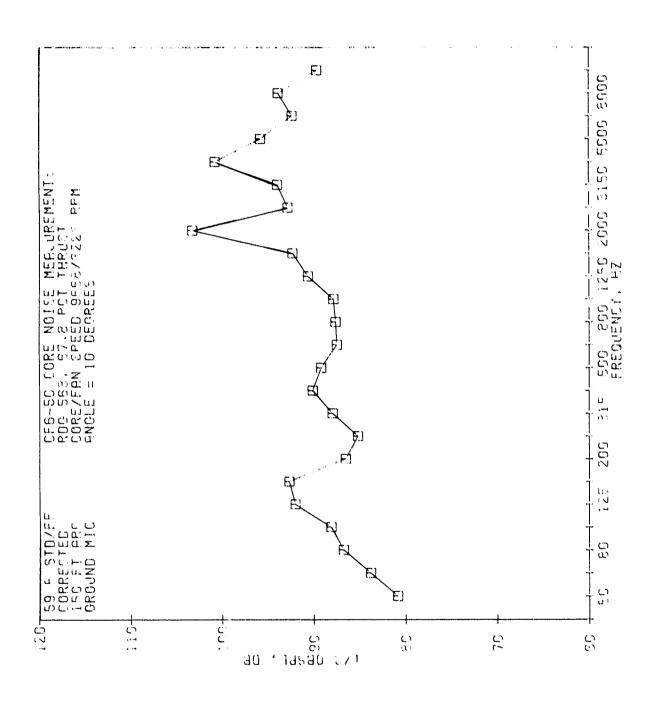


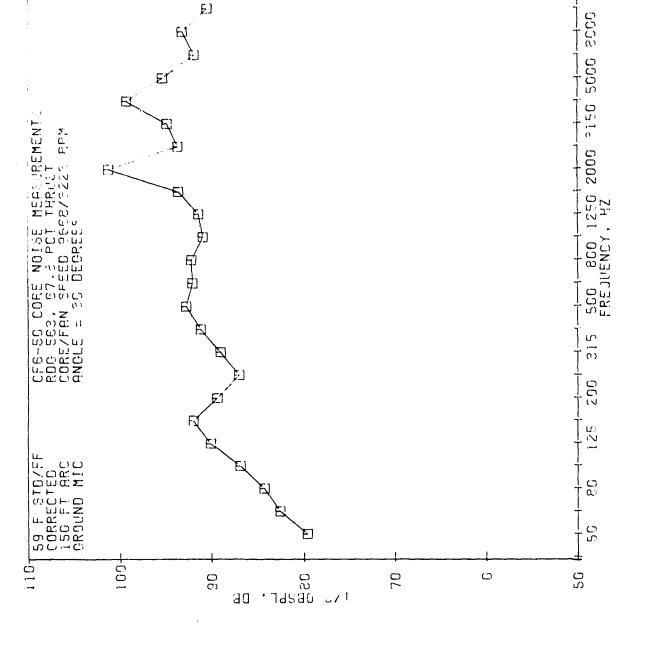


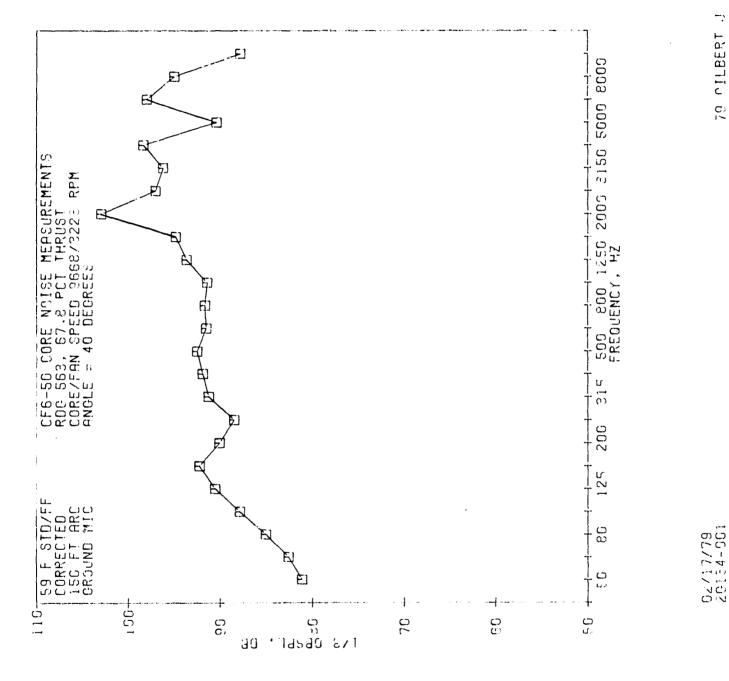
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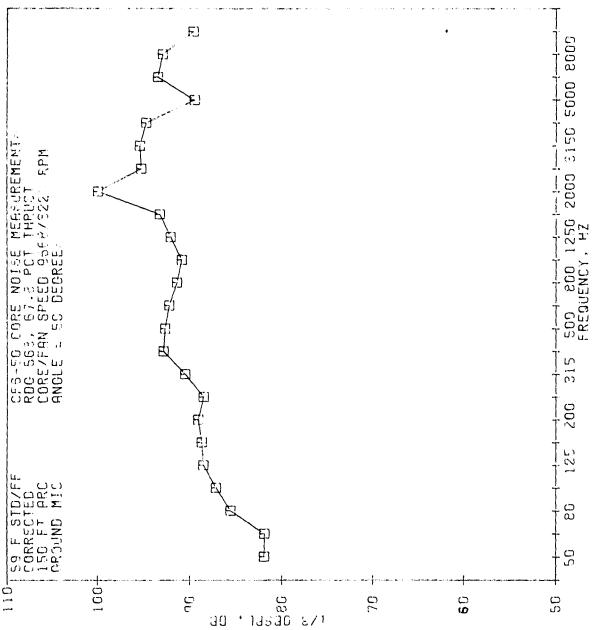




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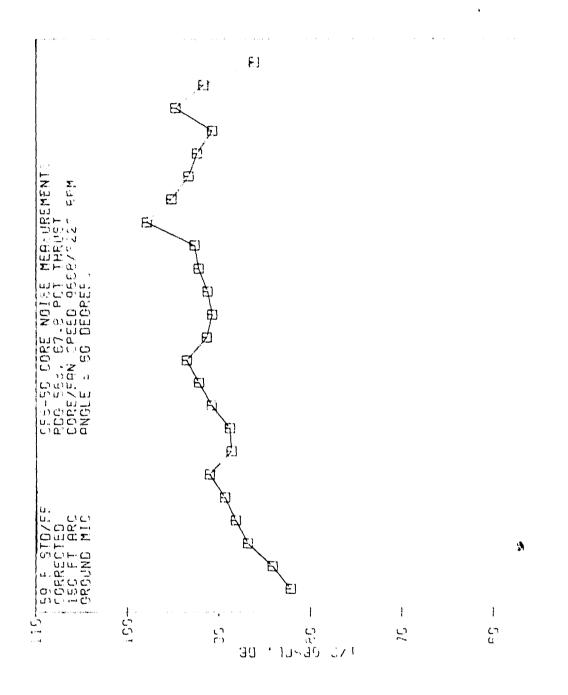
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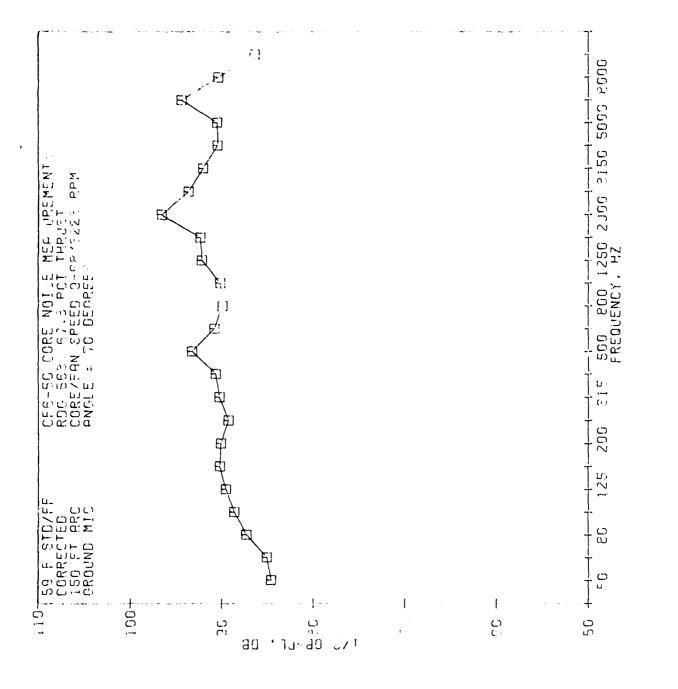
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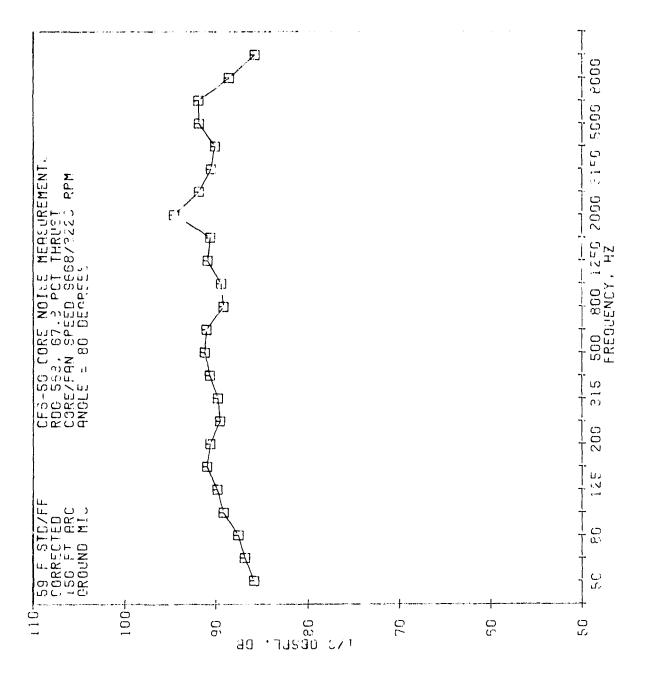
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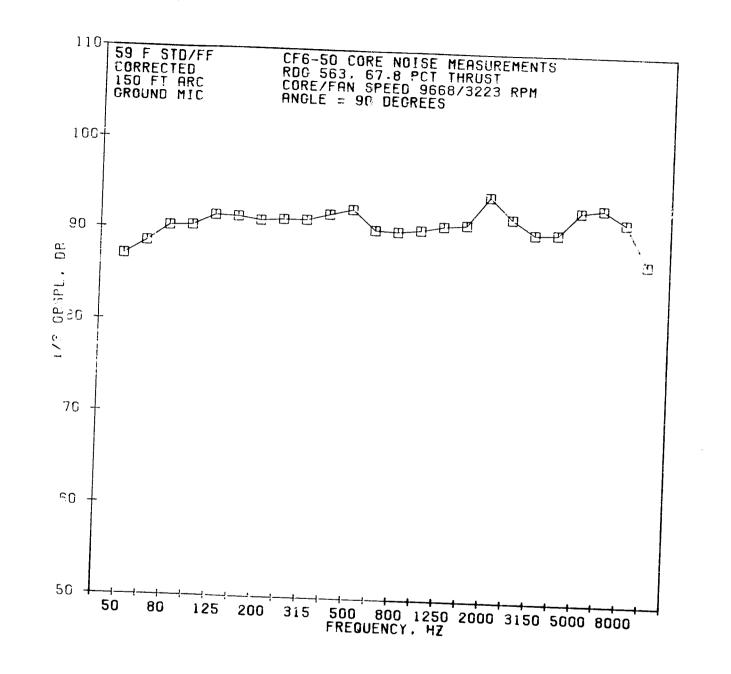


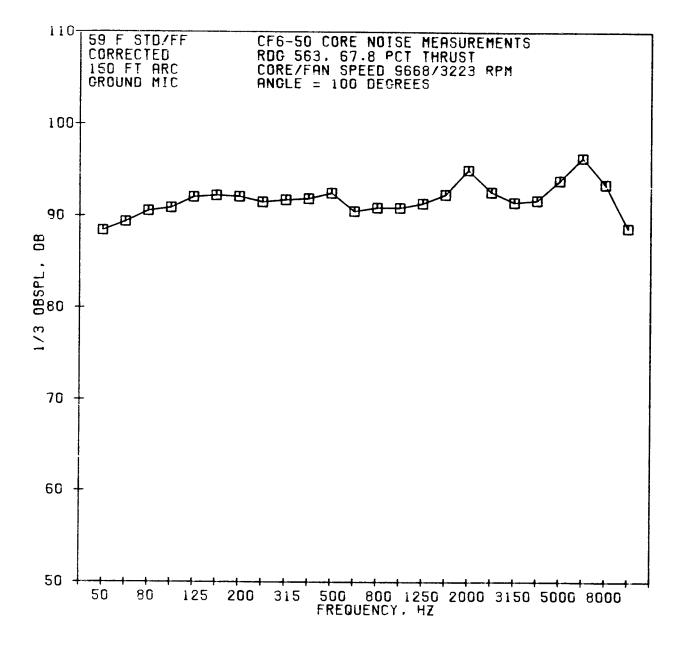
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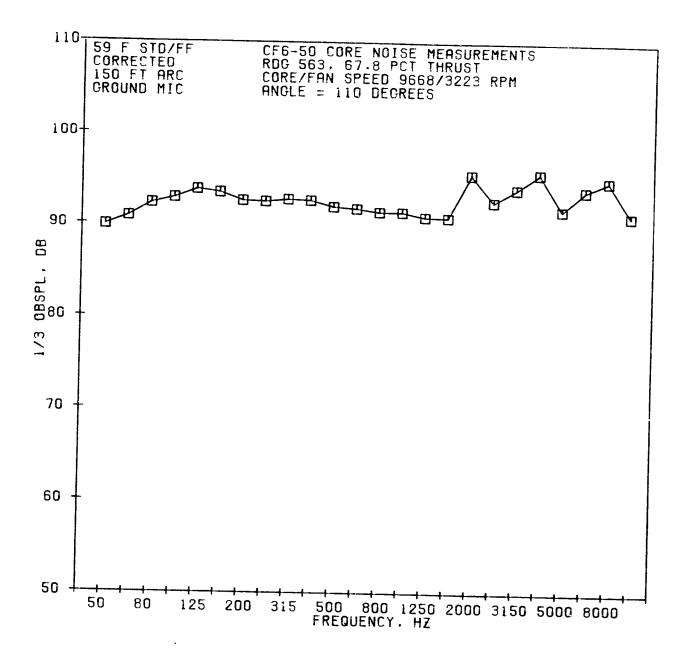




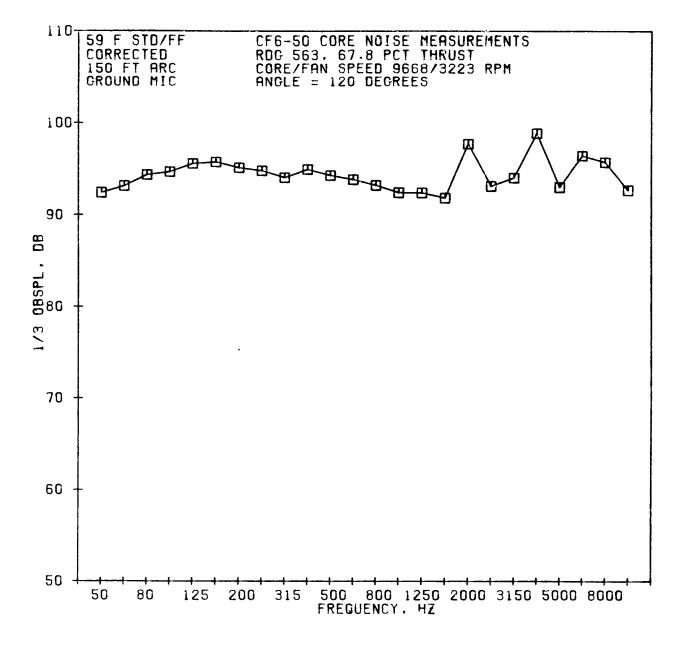
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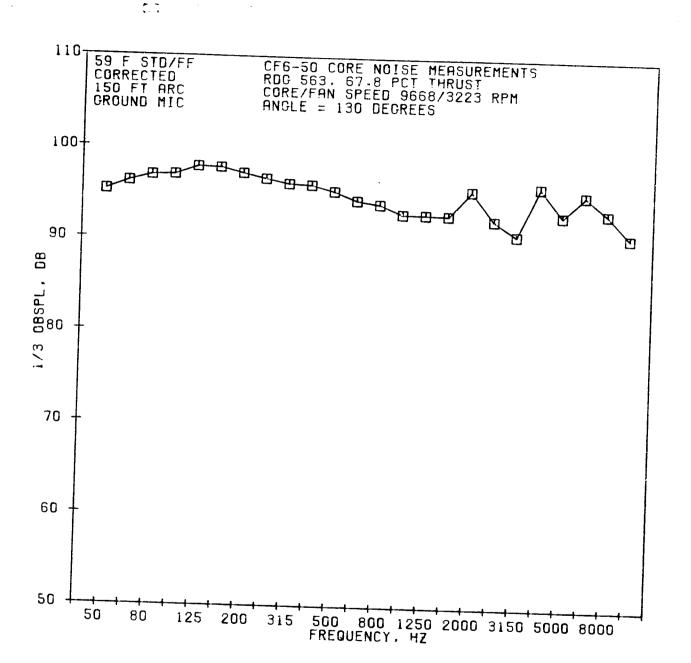






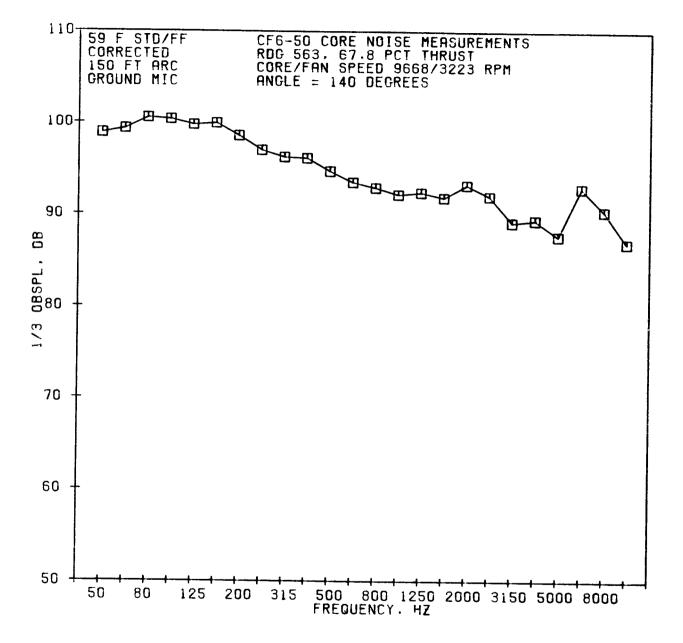
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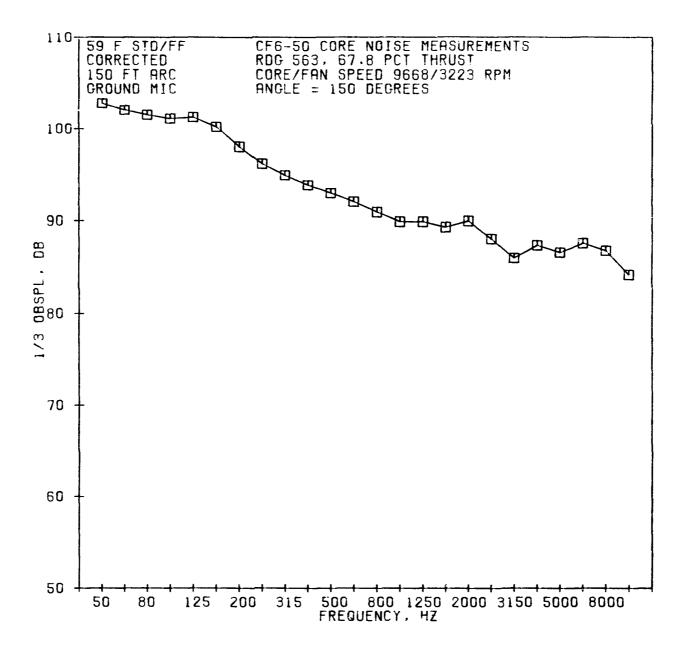


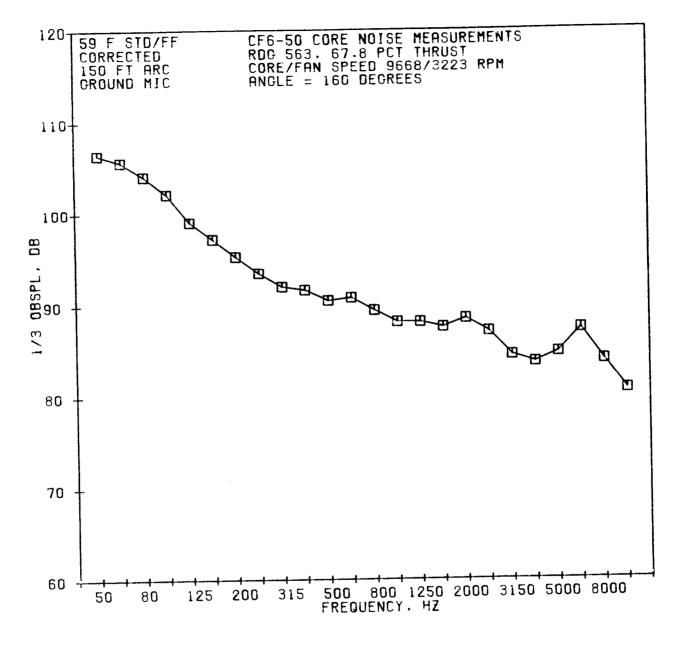


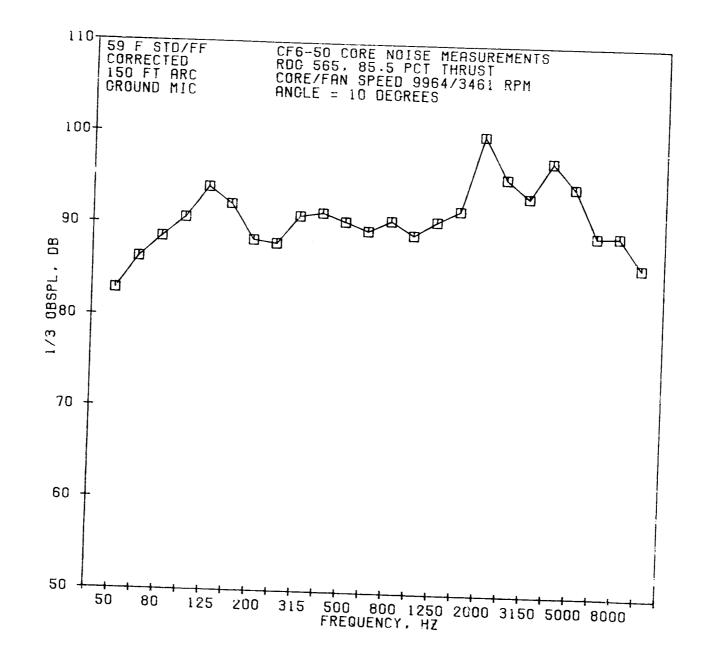
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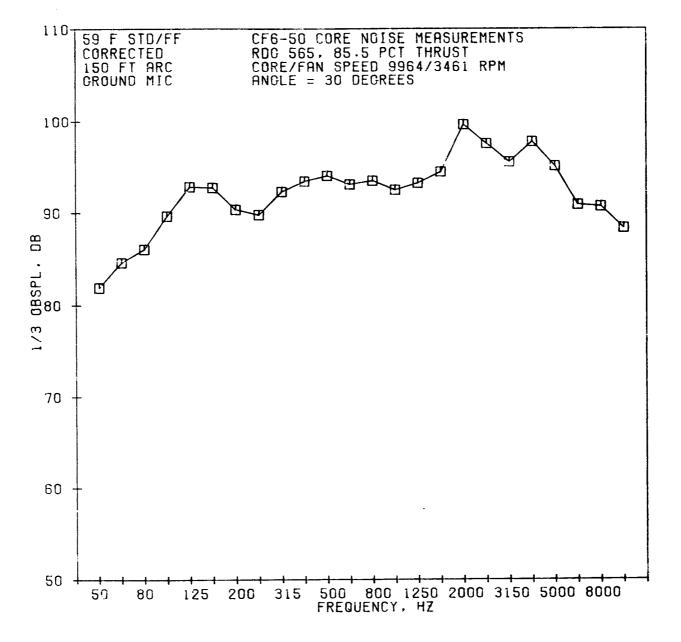
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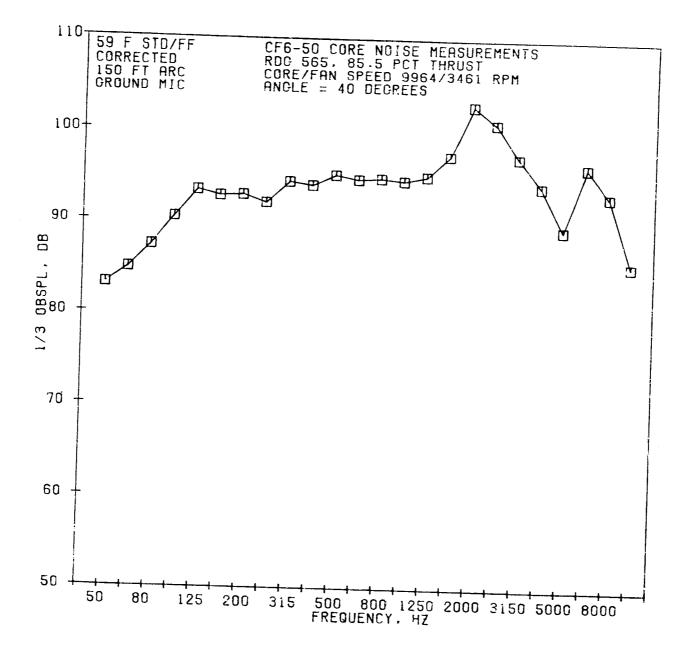


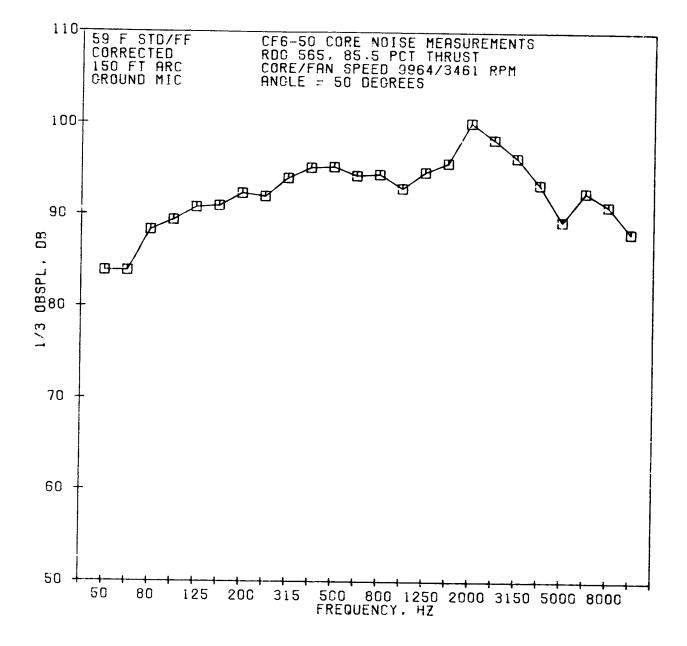


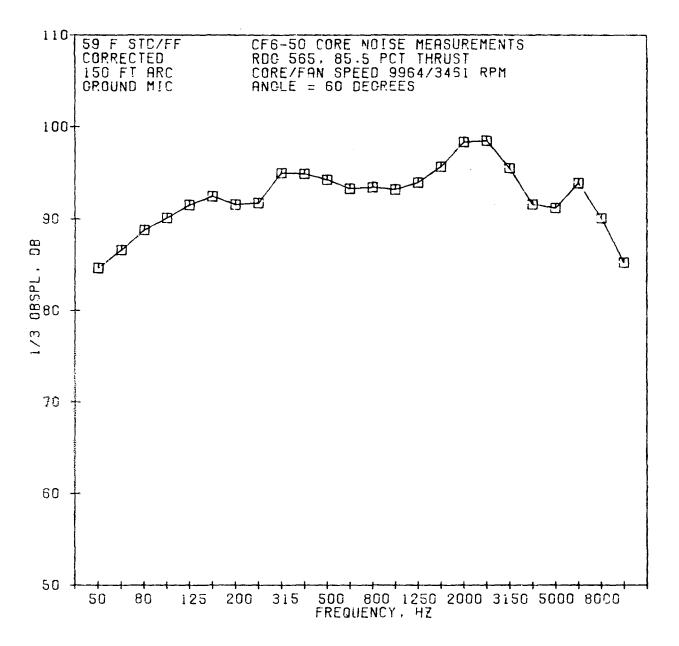


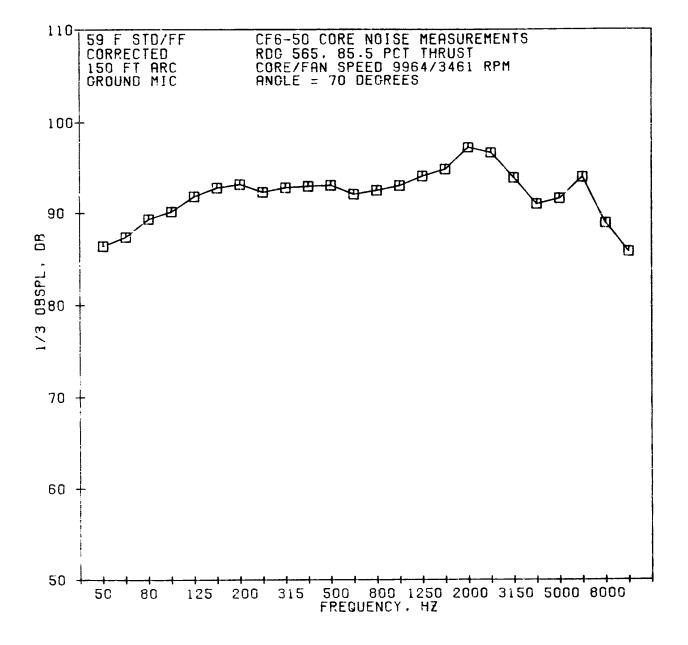




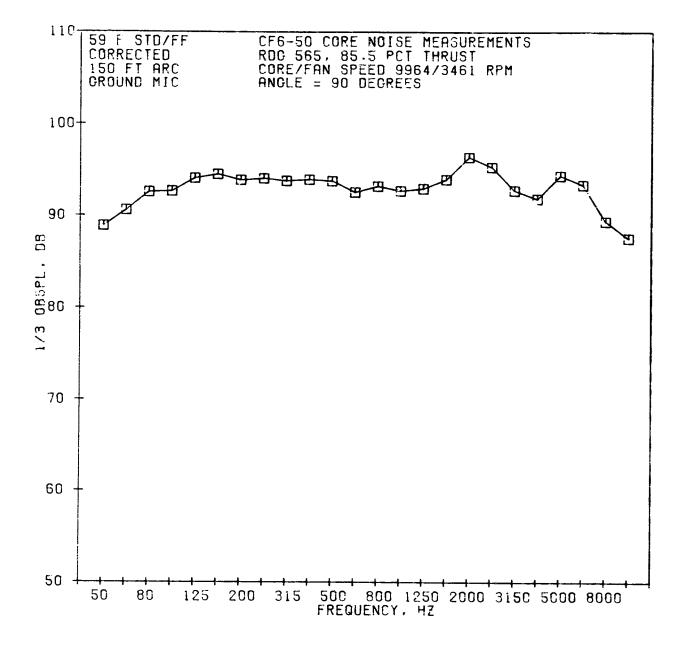


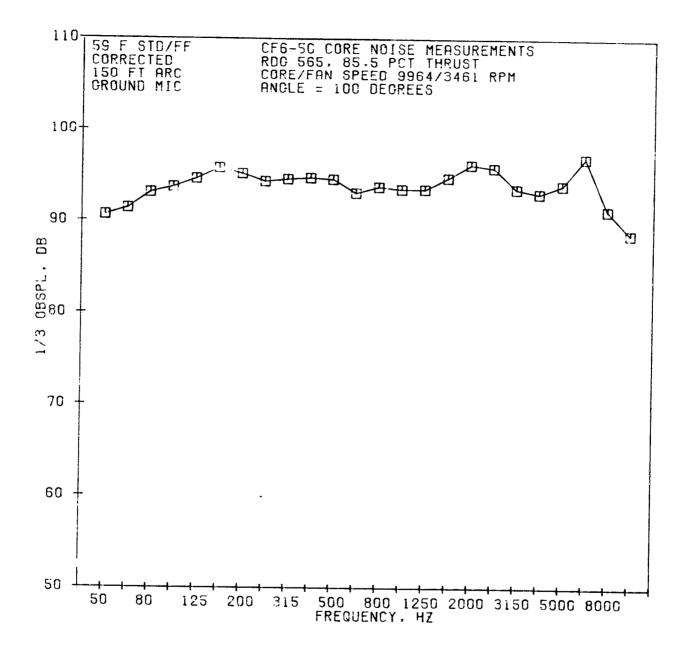


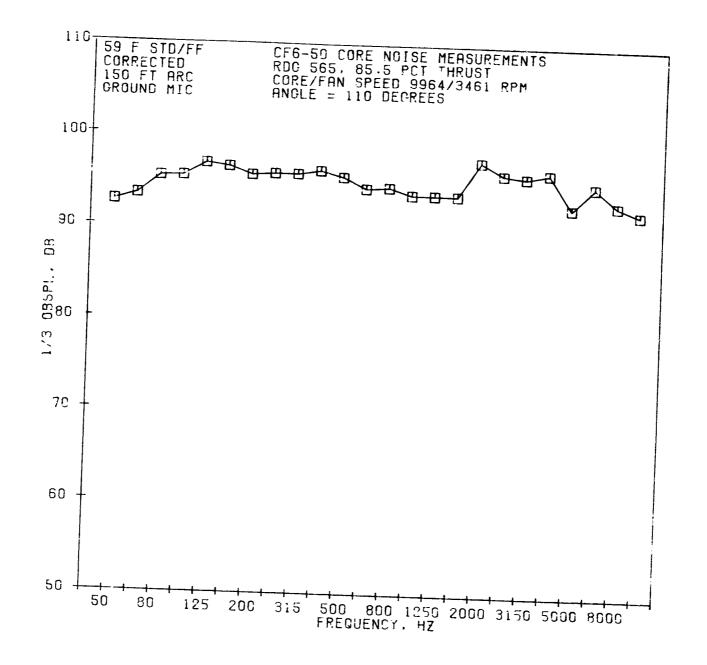


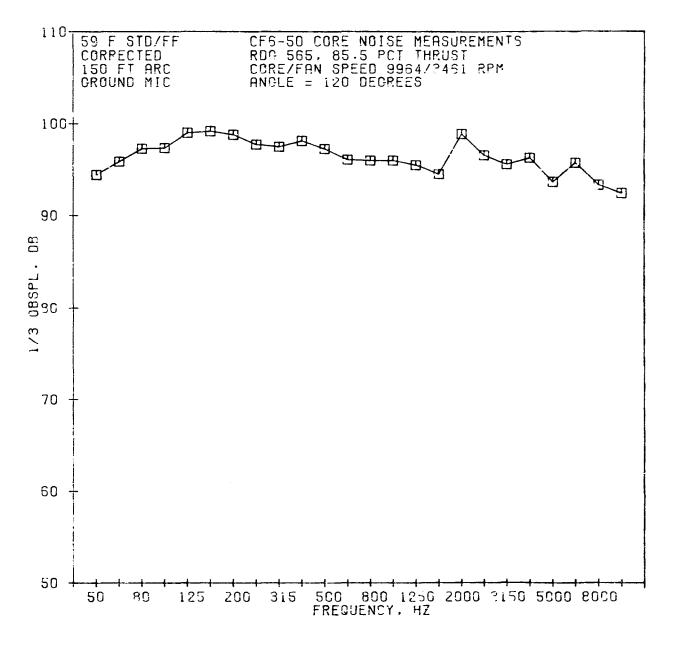


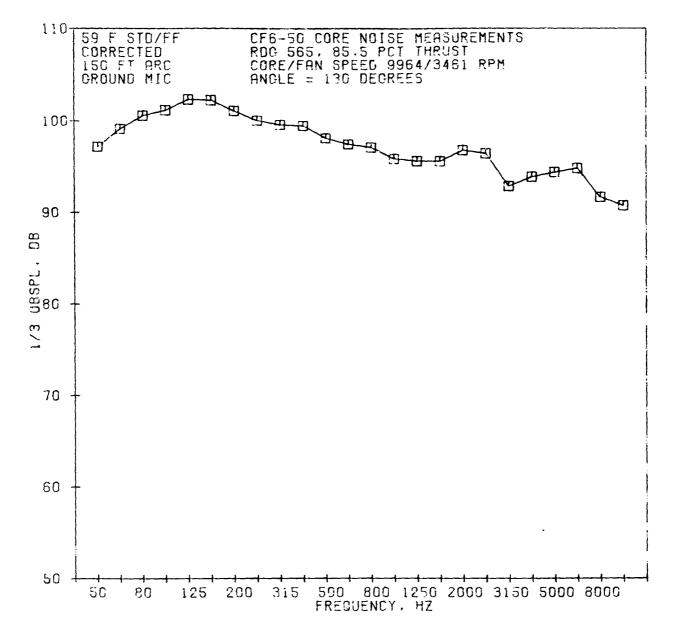
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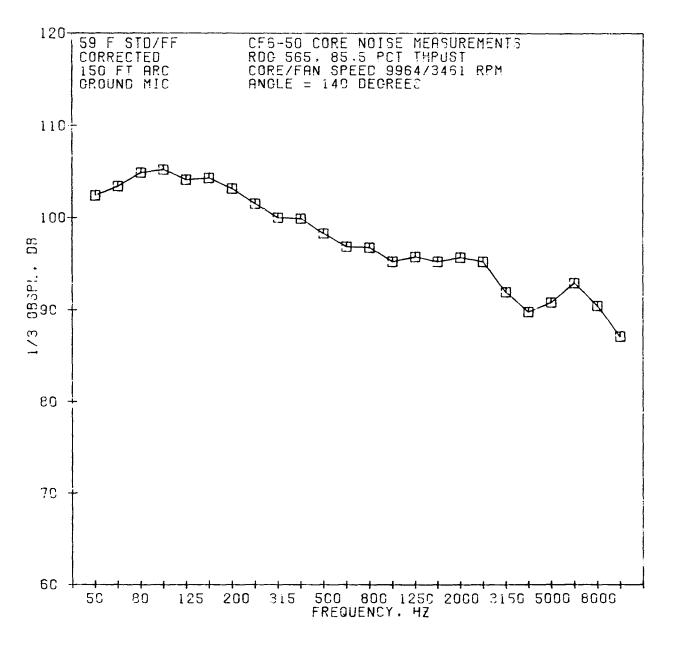


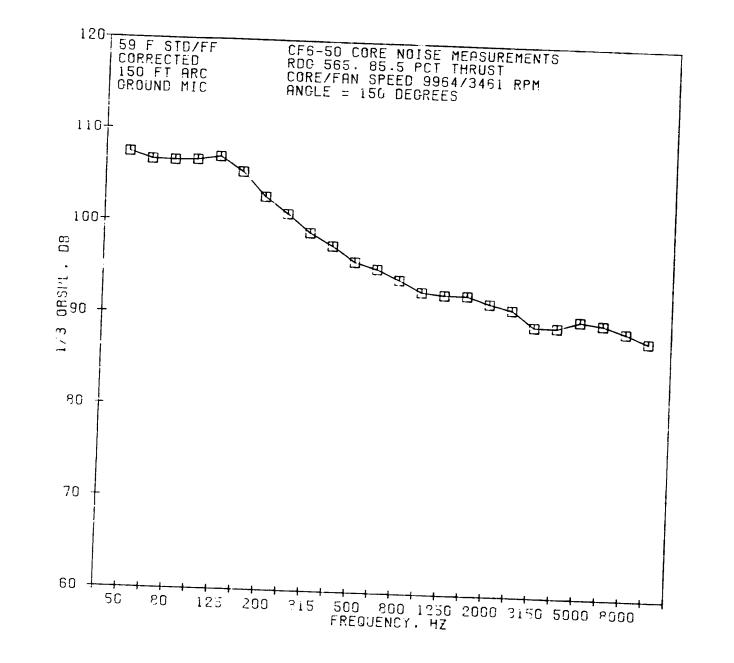


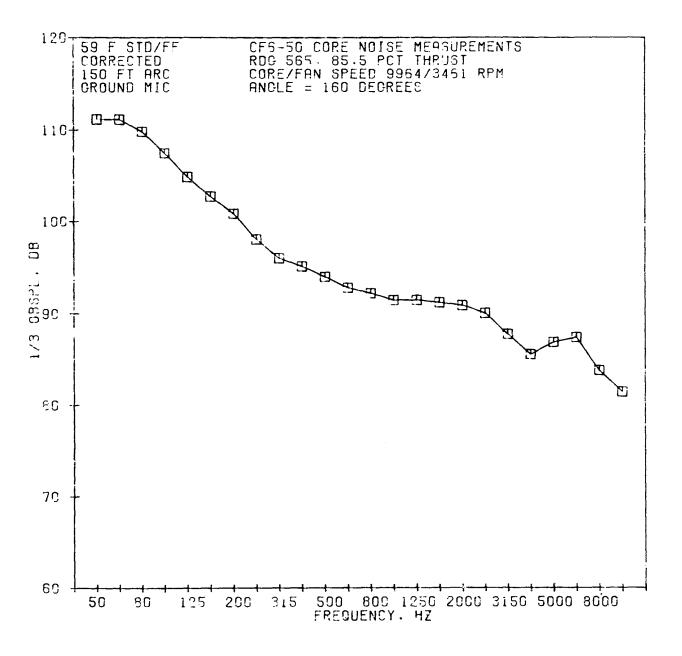


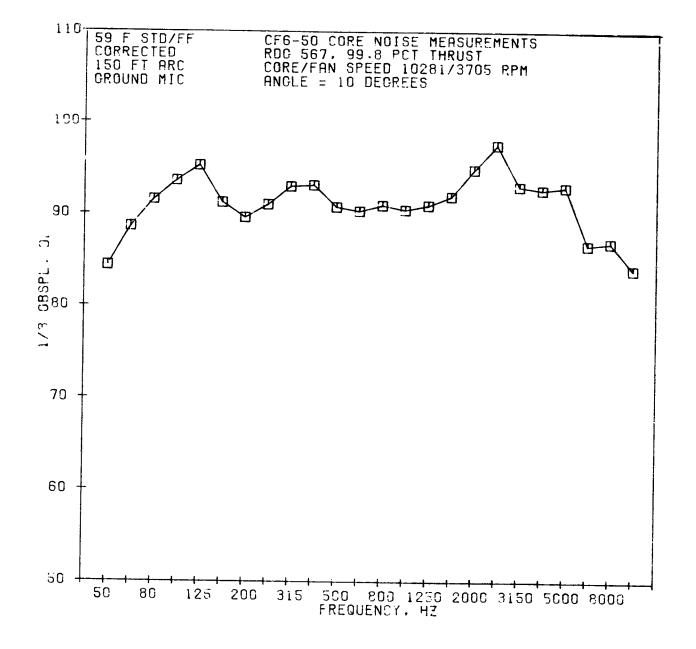




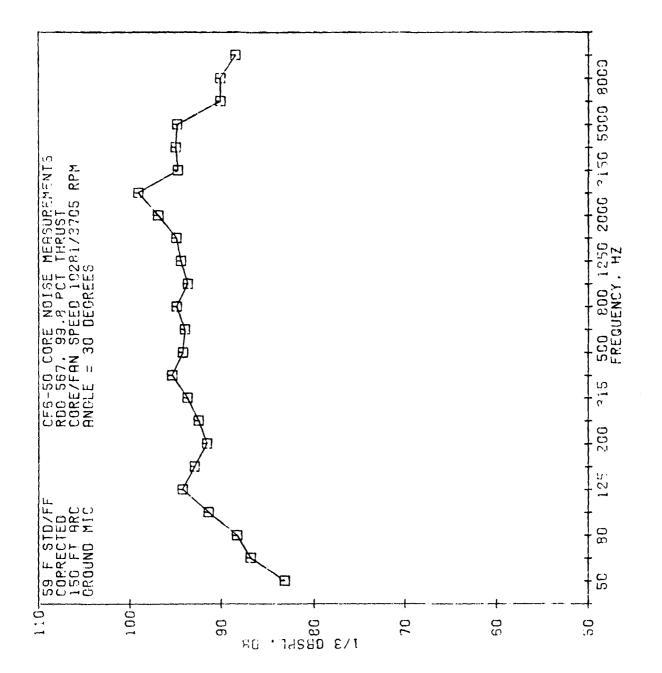


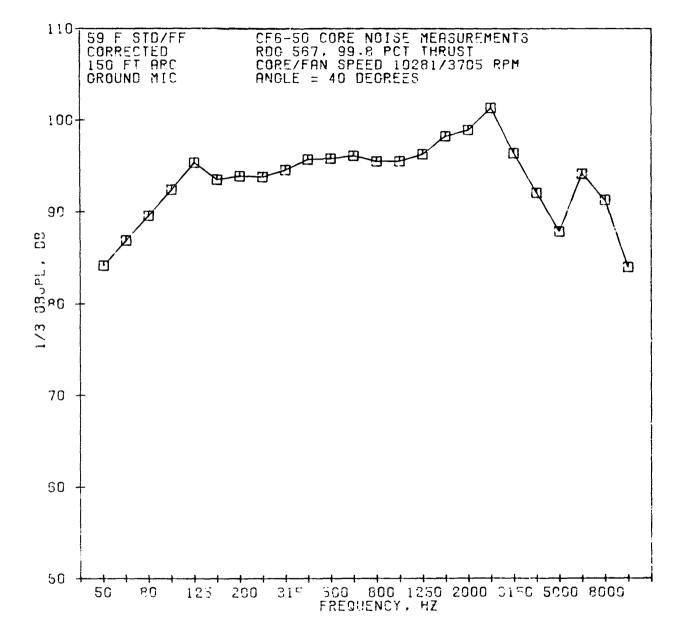


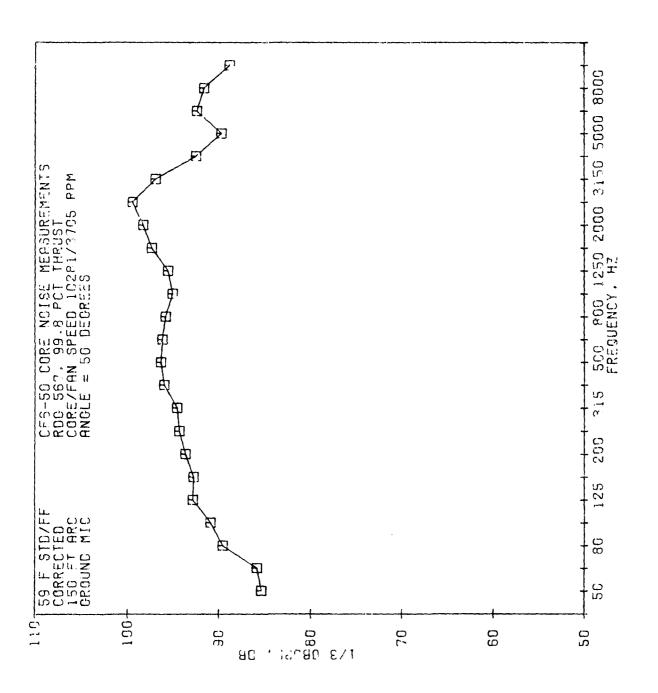




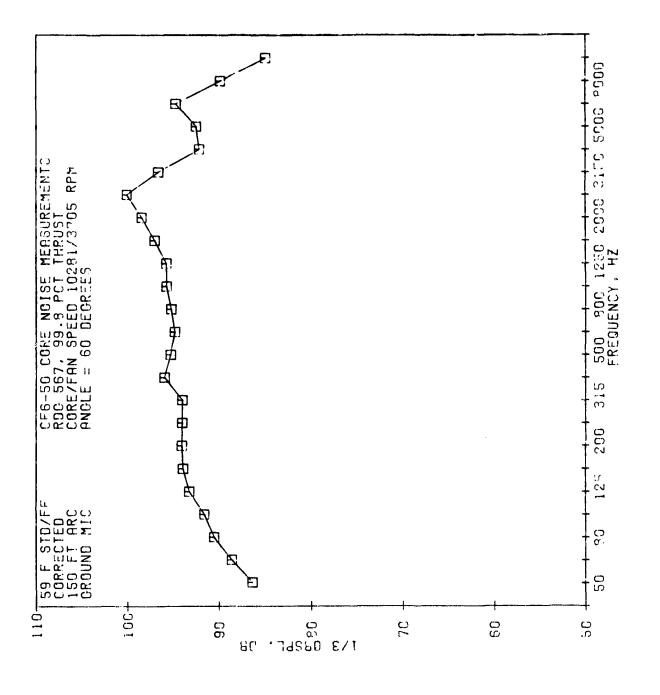




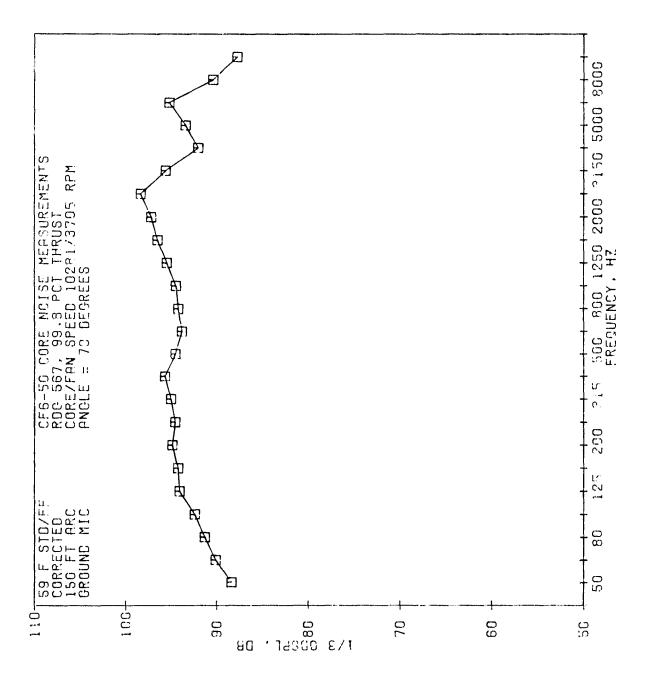




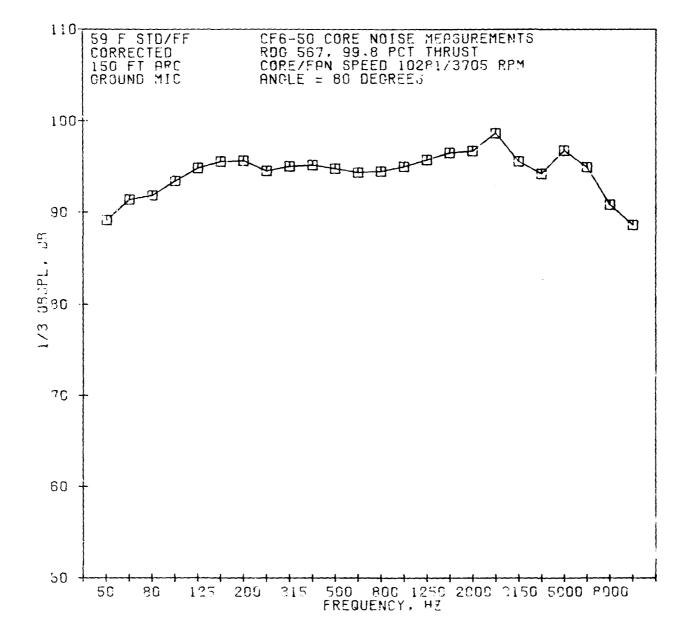
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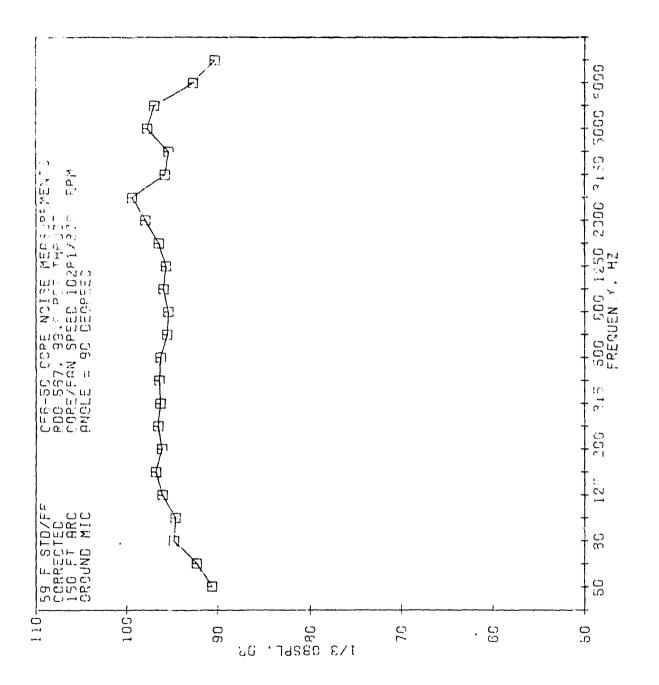


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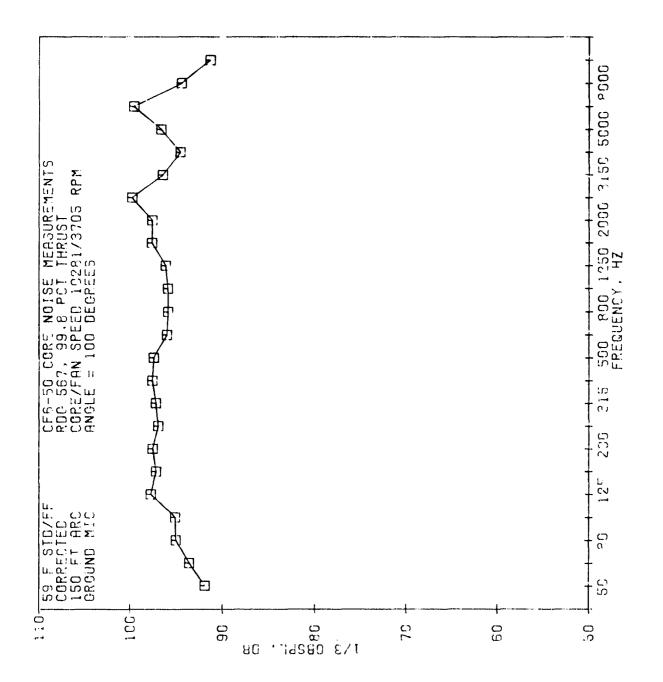


32/17/79

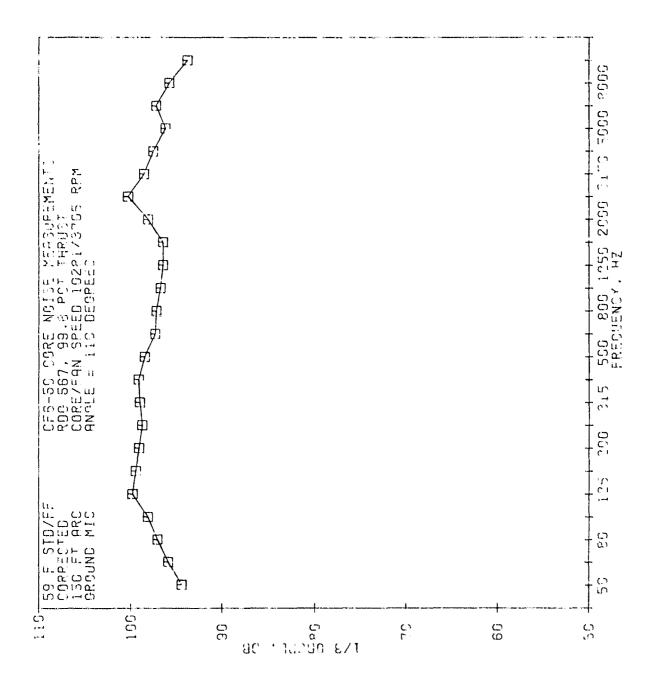




8/11/7



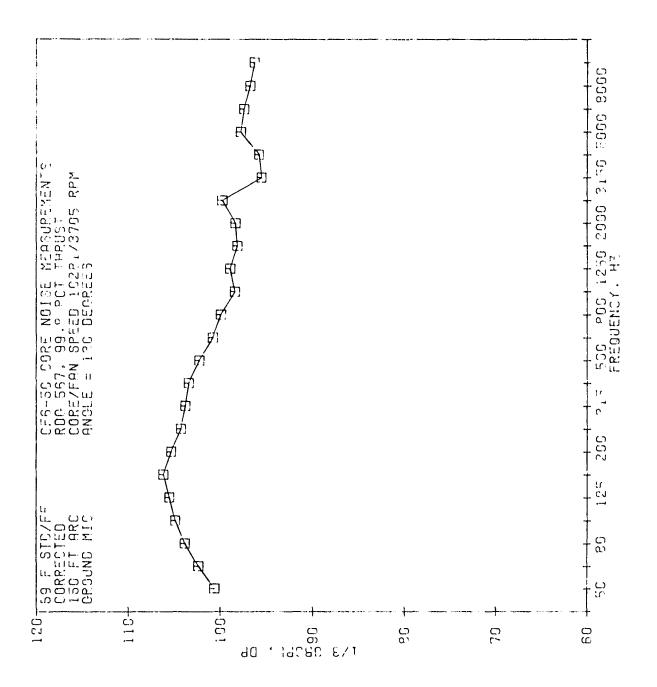
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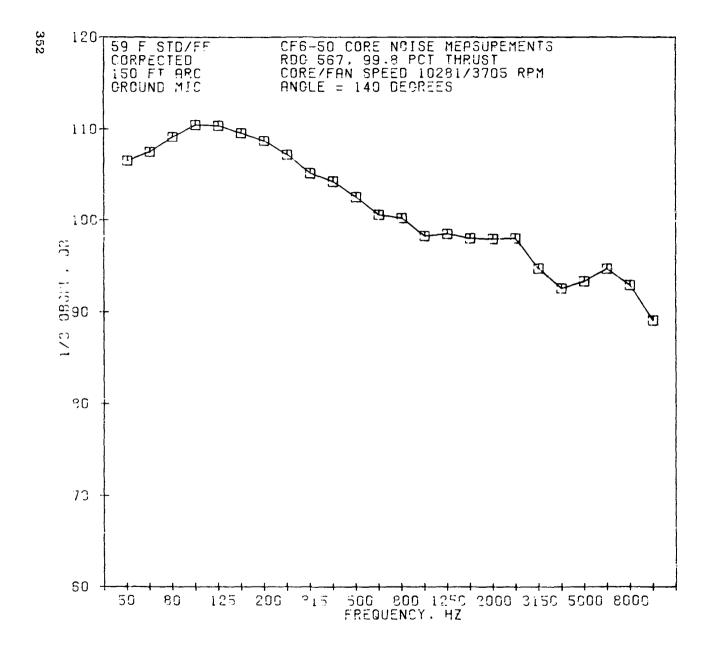
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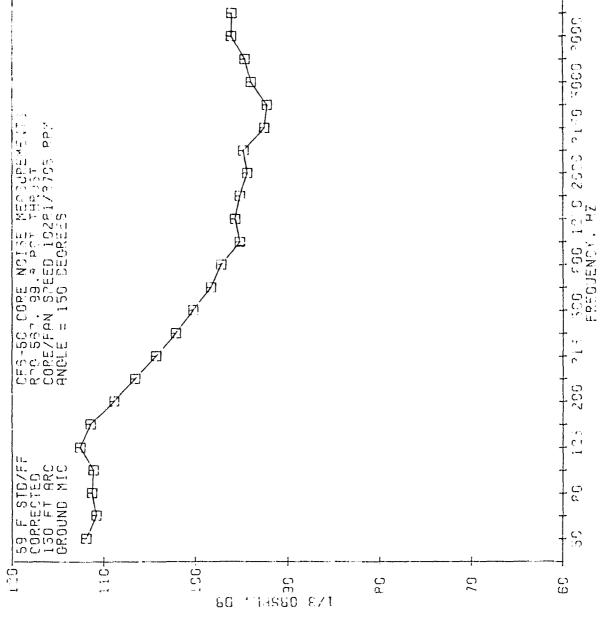
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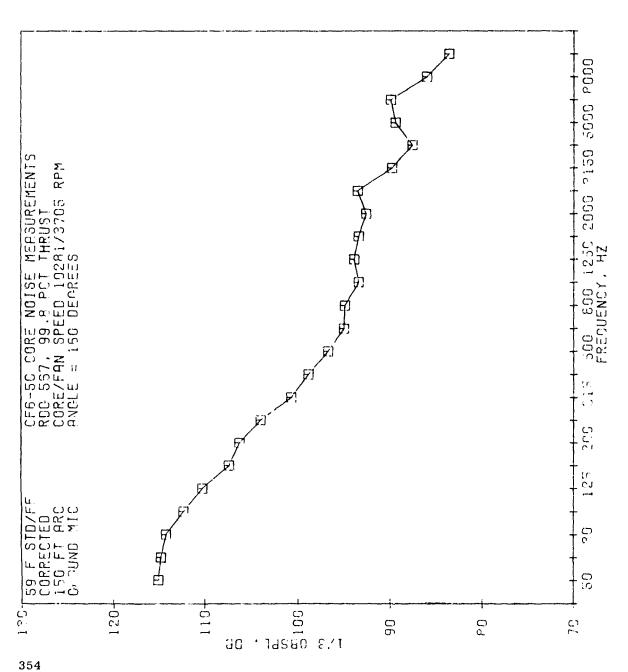


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